

# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Map books

Sound, noise and vibration - Country South (*Part 2 of 4*)

November 2013

ES 3.5.1.9.2



Department  
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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Map series description	<p>SV-01 presents the predicted operational sound from the new railway.</p> <p>The sound levels from the new railway (expressed as LpAeq,T) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.</p>	<p>SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.</p> <p>The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.</p>	<p>The SV-03 figure series accompanies the construction noise &amp; vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.</p> <p>The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.</p>	<p>The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.</p> <p>The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.</p>
Community Forum Area name				
CFA 07 – Colne Valley	✓	✓	✓	✓
CFA 08 – The Chalfonts and Amersham	✗	✓	✓	✓
CFA 09 – Central Chilterns	✓	✓	✓	✓
CFA 10 – Dunsmore, Wendover and Halton	✓	✓	✓	✓
CFA 11 – Stoke Mandeville and Aylesbury	✓	✓	✓	✓
CFA 12 – Waddesdon and Quainton	✓	✓	✓	✓
CFA 13 – Calvert, Steeple Claydon, Twyford and Chetwode	✓	✓	✓	✓
CFA 14 – Newton Purcell to Brackley	✓	✓	✓	✓
CFA 15 – Greatworth to Lower Boddington	✓	✓	✓	✓

# Mapping explanatory notes

## Copyright statements

Copyright statements are presented in the data dictionary and definitions section at the front of the map book, due to limited space to include this on the individual maps themselves.

## Ordnance Survey data

All maps produced as part of the London-West Midlands Environmental Statement (ES) contain Ordnance Survey (OS) data. HS2 Ltd uses the most up-to-date mapping available, where possible, supplied by the OS. As such, we cannot be held responsible for any inaccuracies within this data.

As part of our licence conditions, all digital maps carry a watermark.

## Chainage

Most of the maps presented as part of the ES have a chainage value shown next to the alignment. Chainage is presented on the maps in black font, in the form of XX+YYY, for example: 77+000.

Chainage (known as reference chainage) is referenced from Euston station, which is 0+000, and the value presented is in metres. For example, 77+000 refers to the point 77,000m, or 77km, from Euston station. Chainage values increase in intervals dependant on the map scale. For maps at 1:50,000, scale chainage is shown at 5km intervals. For maps at 1:25,000, scale chainage is shown at 2km intervals. For maps at 1:10,000, 1:5,000 and 1:2,500 scales, chainage is shown at 1km intervals.

Chainage has been included on the maps as a useful tool for comparing map sets showing the different environmental themes or engineering plans, due to map sets having different scales and therefore showing differing amounts of alignment on the map.

## Map orientation

The majority of the maps presented in these map books are presented with the railway alignment running horizontally across the page. The direction of travel to London would be following the alignment to the right hand side of the page, and the West Midlands to the left.

The exceptions to this are map series LV-02, LV-03, LV-04, LV-07 and LV-08, which present the alignment running from the bottom to the top of the page. This is to allow more of the modelled outputs to be shown at the appropriate map scale. In this instance, the direction of travel to London would be to the bottom of the page, and the West Midlands to the top.

Map books

There are a total of 76 map books in the ES, spread across Volumes 2, 4 and 5. A list of the titles is provided in the table below for reference.

Name	Name
Volume 2 Map Books Community Forum Area: 01 Euston – Station and Approach	Volume 5 Map Books: Ecology – Community Forum Area: 05 Northolt Corridor
Volume 2 Map Book s Community Forum Area: 02 Camden Town and HS1 Link	Volume 5 Map Books: Ecology – Community Forum Area: 06 South Ruislip to Ickenham
Volume 2 Map Books Community Forum Area: 03 Primrose Hill to Kilburn (Camden)	Volume 5 Map Books: Ecology – Community Forum Area: 07 Colne Valley
Volume 2 Map Books Community Forum Area: 04 Kilburn (Brent) to Old Oak Common	Volume 5 Map Books: Ecology – Community Forum Area: 08 The Chalfonts and Amersham
Volume 2 Map Books Community Forum Area: 05 Northolt Corridor	Volume 5 Map Books: Ecology – Community Forum Area: 09 Central Chilterns
Volume 2 Map Books Community Forum Area: 06 South Ruislip to Ickenham	Volume 5 Map Books: Ecology – Community Forum Area: 10 Dunsmore, Wendover and Halton
Volume 2 Map Books Community Forum Area: 07 Colne Valley	Volume 5 Map Books: Ecology – Community Forum Area: 11 Stoke Mandeville and Aylesbury
Volume 2 Map Books Community Forum Area: 08 The Chalfonts and Amersham	Volume 5 Map Books: Ecology – Community Forum Area: 12 Waddesdon and Quainton
Volume 2 Map Books Community Forum Area: 09 Central Chilterns	Volume 5 Map Books: Ecology – Community Forum Area: 13 Calvert, Steeple Claydon, Twyford and Chetwode
Volume 2 Map Books Community Forum Area: 10 Dunsmore, Wendover and Halton	Volume 5 Map Books: Ecology – Community Forum Area: 14 Newton Purcell to Brackley
Volume 2 Map Books Community Forum Area: 11 Stoke Mandeville and Aylesbury	Volume 5 Map Books: Ecology – Community Forum Area: 15 Greatworth to Lower Boddington
Volume 2 Map Books Community Forum Area: 12 Waddesdon and Quainton	Volume 5 Map Books: Ecology – Community Forum Area: 16 Ladbroke and Southam
Volume 2 Map Books Community Forum Area: 13 Calvert, Steeple Claydon, Twyford and Chetwode	Volume 5 Map Books: Ecology – Community Forum Area: 17 Offchurch and Cubbington
Volume 2 Map Books Community Forum Area: 14 Newton Purcell to Brackley	Volume 5 Map Books: Ecology – Community Forum Area: 18 Stoneleigh, Kenilworth and Burton Green
Volume 2 Map Books Community Forum Area: 15 Greatworth to Lower Boddington	Volume 5 Map Books: Ecology – Community Forum Area: 19 Coleshill Junction
Volume 2 Map Books Community Forum Area: 16 Ladbroke and Southam	Volume 5 Map Books: Ecology – Community Forum Area: 20 Curdworth to Middleton
Volume 2 Map Books Community Forum Area: 17 Offchurch and Cubbington	Volume 5 Map Books: Ecology – Community Forum Area: 21 Drayton Bassett, Hints and Weeford
Volume 2 Map Books Community Forum Area: 18 Stoneleigh, Kenilworth and Burton Green	Volume 5 Map Books: Ecology – Community Forum Area: 22 Whittington to Handsacre
Volume 2 Map Books Community Forum Area: 19 Coleshill Junction	Volume 5 Map Books: Ecology – Community Forum Area: 23 Balsall Common and Hampton-in-Arden
Volume 2 Map Books Community Forum Area: 20 Curdworth to Middleton	Volume 5 Map Books: Ecology – Community Forum Area: 24 Birmingham Interchange and Chelmsley Wood
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Volume 2 Map Books Community Forum Area: 22 Whittington to Handsacre	Volume 5 Map Books: Ecology – Community Forum Area: 26 Washwood Heath to Curzon Street
Volume 2 Map Books Community Forum Area: 23 Balsall Common and Hampton-in-Arden	Volume 5 Map Books: Land Quality
Volume 2 Map Books Community Forum Area: 24 Birmingham Interchange and Chelmsley Wood	Volume 5 Map Books: Landscape and Visual – Euston and London Metropolitan
Volume 2 Map Books Community Forum Area: 25 Castle Bromwich and Bromford	Volume 5 Map Books: Landscape and Visual – Country South
Volume 2 Map Books Community Forum Area: 26 Washwood Heath to Curzon Street	Volume 5 Map Books: Landscape and Visual – Country North
Volume 4 Map Books Off Route Effects	Volume 5 Map Books: Landscape and Visual – West Midlands Metropolitan
Volume 5 Map Books: Agriculture, Forestry and Soils	Volume 5 Map Books: Socio-Economic
Volume 5 Map Books: Air Quality	Volume 5 Map Books: Sound, Noise and Vibration – Euston and London Metropolitan
Volume 5 Map Books: Community	Volume 5 Map Books: Sound, Noise and Vibration – Country South
Volume 5 Map Books: Cultural Heritage – Euston and London Metropolitan	Volume 5 Map Books: Sound, Noise and Vibration – Country North
Volume 5 Map Books: Cultural Heritage – Country South	Volume 5 Map Books: Sound, Noise and Vibration – West Midlands Metropolitan
Volume 5 Map Books: Cultural Heritage – Country North	Volume 5 Map Books: Traffic and Transport
Volume 5 Map Books: Cultural Heritage – West Midlands Metropolitan	Volume 5 Map Books: Water Resources – Euston and London Metropolitan
Volume 5 Map Books: Ecology – Community Forum Area: 01 Euston - Station and Approach	Volume 5 Map Books: Water Resources – Country South
Volume 5 Map Books: Ecology – Community Forum Area: 02 Camden Town and HS1 Link	Volume 5 Map Books: Water Resources – Country North
Volume 5 Map Books: Ecology – Community Forum Area: 03 Primrose Hill to Kilburn (Camden)	Volume 5 Map Books: Water Resources – West Midlands Metropolitan
Volume 5 Map Books: Ecology – Community Forum Area: 04 Kilburn (Brent) to Old Oak Common	Volume 5 Map Books: Cross Topic Appendix 1: Committed Developments

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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Data dictionary and definitions

# Data dictionary and definitions

Legend features	Definition	Source	Copyright
Airborne sound and vibration assessment location	Locations near surface sections of the route at which a quantitative assessment of airborne sound and ground-borne vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004.	High Speed Two (HS2) Ltd	
Airborne sound assessment location	Locations at which a quantitative assessment of airborne sound impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004.	High Speed Two (HS2) Ltd	
Airborne sound, ground-borne sound and vibration assessment location	Locations at which a quantitative assessment of airborne sound, ground-borne sound and vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound & vibration reports contained in Volume 5: Appendix SV-004.	High Speed Two (HS2) Ltd	
Airborne sound study area	This defines the area within which operational airborne sound impacts of the scheme have been quantitatively assessed. This area is defined as within 1km of surface sections of the route in rural areas and within 500m of surface sections of the route in urban areas.	High Speed Two (HS2) Ltd	
Baseline measurement locations	These represent locations at which sound measurements were carried out as part of the baseline sound surveys. Measurements of existing baseline sound levels at these locations have been used to derive baseline sound levels at operational and construction sound assessment locations. These baseline measurement locations are labelled with a reference number which enables cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002, which also describes how these are linked to baseline levels at assessment locations.	High Speed Two (HS2) Ltd	
Committed developments	<p>This informs the assessment of the future baseline.</p> <p>A development consent or allocation that has full or outline planning permission, or is allocated in an adopted development plan.</p>	High Speed Two (HS2) Ltd	© Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190.
Community Forum boundary	The Environmental Statement has been split into 26 sections called Community Forum Areas.	High Speed Two (HS2) Ltd	© Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190.
Construction airborne sound and vibration assessment location	Locations at which a quantitative assessment of construction noise and vibration impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-003.	High Speed Two (HS2) Ltd	
Construction airborne sound assessment location	Locations at which a quantitative assessment of construction noise impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-003.	High Speed Two (HS2) Ltd	

Legend features	Definition	Source	Copyright
Construction vibration assessment locations	Locations at which a quantitative assessment of construction vibration impacts of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the construction sound & vibration reports contained in Volume 5: Appendix SV-003.	High Speed Two (HS2) Ltd	
County boundary	County boundaries from Ordnance Survey boundary mapping.	Ordnance Survey	© Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190.
Depot, station, headhouse or portal building	Extends to cover operational footprint of each depot and station and the footprint of each tunnel vent shaft and headhouse at surface level. Excludes any ancillary buildings associated with these structures.	High Speed Two (HS2) Ltd	
District/Borough boundary	Ordnance Survey local authority boundary mapping.	Ordnance Survey	© Crown Copyright and database rights 2013 Ordnance Survey Licence Number 100049190.
Engineering earthworks: cutting	Cuttings created in the construction of the railway and associated works such as highways.	High Speed Two (HS2) Ltd	
Engineering earthworks: embankment	Embankments created in the construction of the railway and associated works such as highways.	High Speed Two (HS2) Ltd	
Envisaged measures further reducing noise effects	<p>Other environmental features e.g. landscaping: These lines represent environmental mitigation features provided for reasons other than noise mitigation which also reduce sound levels from the Proposed Scheme to the surrounding environment. These features are not placed specifically to reduce or remove a likely significant noise effect. Examples include landscaping and visual mitigation earthworks (non-engineering earthworks).</p> <p>Engineering e.g. cuttings: These lines represent engineering features which reduce sound levels from the Proposed Scheme to the surrounding environment but are not placed specifically to reduce or remove a likely significant noise effect. Examples include cuttings and safety barriers on viaducts which are not close to sensitive receptors.</p>	High Speed Two (HS2) Ltd	
Envisaged mitigation to avoid/reduce significant noise effects	<p>Landscaping and/or fence barriers: These lines represent the envisaged mitigation provided specifically to reduce sound levels from the Proposed Scheme at sensitive receptors in order to reduce or remove likely operational significant noise effects. Examples include noise fence barriers or earth bunds (non-engineering earthworks) acting as noise barriers. These features are labelled with the height of the top of the barrier/bund above rail level.</p> <p>Engineering e.g. cuttings (green tunnels separately marked): These lines represent engineering features of the route which reduce sound levels from the Proposed Scheme at potentially significant sensitive receptors. These features, therefore, serve a material purpose in reducing or avoiding likely significant noise effects. Examples include engineering cuttings near to sensitive receptors. These features are labelled with the height of the top of the feature above rail level.</p>	High Speed Two (HS2) Ltd	
Ground-borne sound & vibration study area (highly sensitive non-residential)	This defines the area within which direct operational ground-borne sound and vibration impacts of the scheme at highly sensitive non-residential receptors have been quantitatively assessed. This area is defined as within 200m of the route.	High Speed Two (HS2) Ltd	
Ground-borne sound & vibration study area (residential and non-residential)	This defines the area within which direct operational ground-borne sound and vibration impacts of the scheme at residential and non-residential receptors have been quantitatively assessed. This area is defined as within 85m of the route.	High Speed Two (HS2) Ltd	



Legend features	Definition	Source	Copyright
Ground-borne sound and/or vibration assessment location	Locations near tunnelled sections of the route at which a quantitative assessment of ground-borne sound and vibration impacts due to the operation of the Proposed Scheme has been carried out. These are labelled with an assessment location reference code to enable cross-reference to the operational sound & vibration reports contained in Volume 5: Appendix SV-004.	High Speed Two (HS2) Ltd	
Minor ground-borne noise or vibration impact	Buildings at which a minor operational ground-borne sound or vibration impact is predicted from the Proposed Scheme.	High Speed Two (HS2) Ltd	
Non-engineering earthworks: cutting	Cuttings created in the construction of landscape features and mitigation measures.	High Speed Two (HS2) Ltd	
Non-engineering earthworks: embankment	Embankments created in the construction of landscape features and mitigation measures.	High Speed Two (HS2) Ltd	
Operational airborne sound impacts at buildings	The buildings shown on SV-02 and SV-05 are colour-coded according to the magnitude of the predicted noise impacts of the Proposed Scheme. Noise impacts are calculated by comparing the sound levels predicted if the Proposed Scheme did not go ahead with those if it did (details of this process can be found in Volume 5: Appendix SV001-000). Panel B on SV-02/SV-05 contains a key showing the colours used with the corresponding impact categories. The impacts presented are the greatest (i.e. worst-case) of the impacts predicted for daytime and night-time.	High Speed Two (HS2) Ltd	
Potential additional noise insulation (triggered by maximum sound levels at night)	This represents dwellings which would potentially be provided with noise insulation due maximum sound levels from the Proposed Scheme (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001).	High Speed Two (HS2) Ltd	
Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)	This represents dwellings which would potentially be provided with noise insulation due to noise from the Proposed Scheme exceeding the World Health Organization (WHO) night noise guidelines interim target (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001).	High Speed Two (HS2) Ltd	
Potential noise insulation (triggered by Noise Insulation Regulations 1996)	This represents dwellings which would potentially qualify for noise insulation under the Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996 (further information regarding assessment criteria can be found in Volume 5 Appendix SV-001).	High Speed Two (HS2) Ltd	
Route in tunnel Route on surface	Represents the proposed route of HS2, split into route on surface and tunnelled sections.	High Speed Two (HS2) Ltd	
Sound contours (SV-01)	The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented in 5dB steps. The levels are shown in the panel in the top-right hand corner of SV-01.	High Speed Two (HS2) Ltd	
Sound contours (SV-02/SV-05)	The sound levels from the Proposed Scheme (expressed as $L_{pAeq,T}$ and representing sound from the new railway only) are presented at two sound levels: 40 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$ and 55 dB $L_{Aeq,T\ 23:00\ to\ 07:00}$ . The corresponding daytime levels ( $L_{Aeq,T\ 07:00\ to\ 23:00}$ ) are shown in Panel A of SV-02/SV-05.	High Speed Two (HS2) Ltd	



# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA7 | Colne Valley

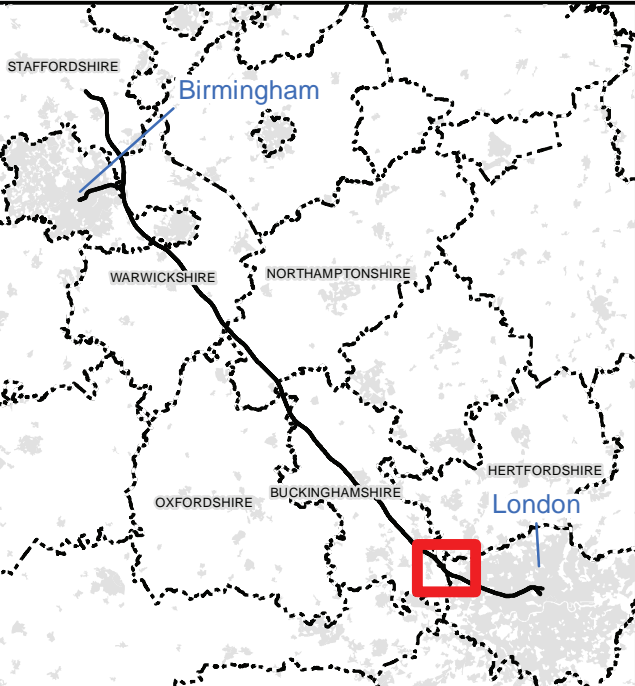
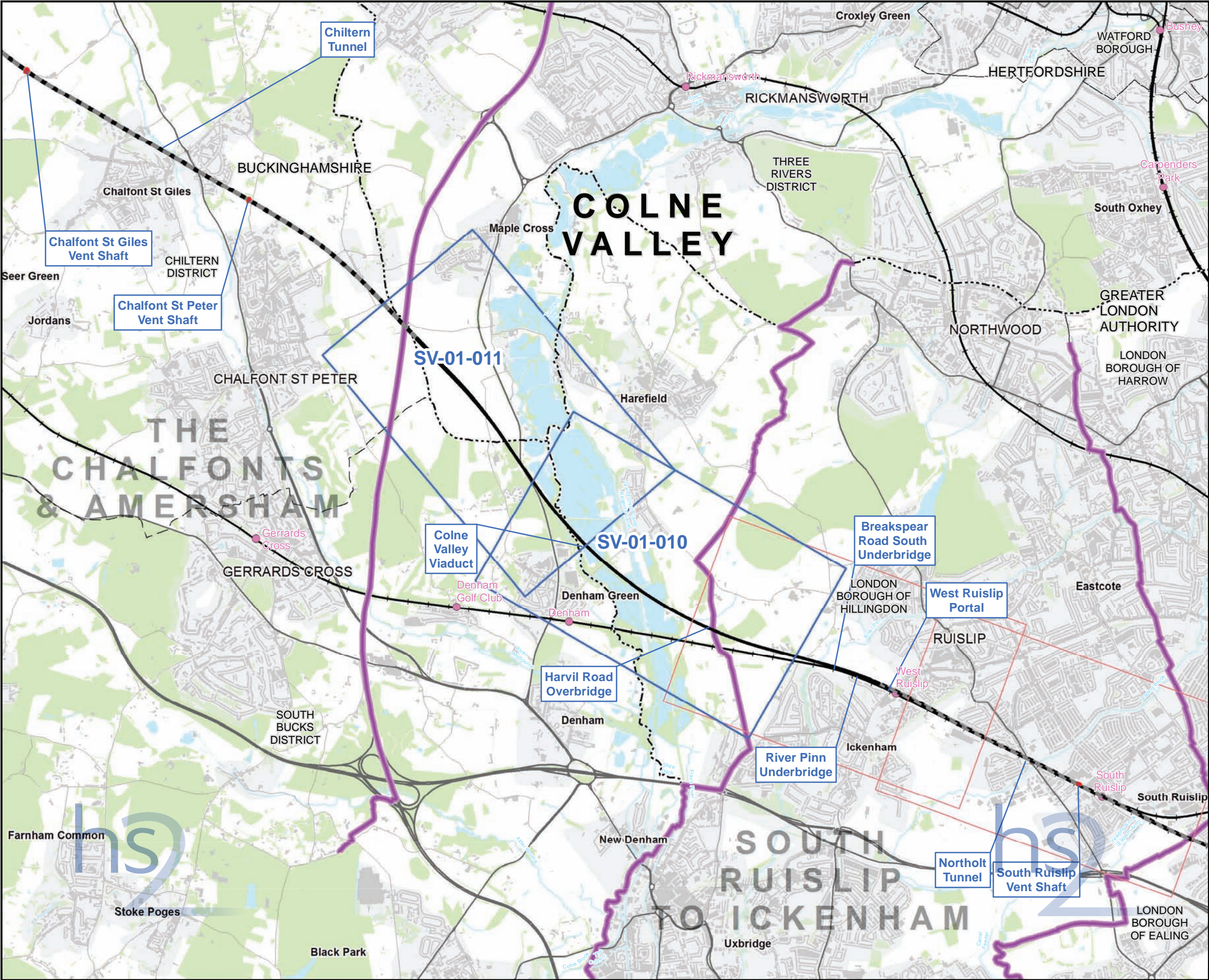
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





### Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

Map Name

SV-01-INDEX-CFA7

Index Map of:  
Operational Sound Contour Maps and  
Likely Significant Effects

Community Forum Area CFA7:  
Colne Valley

hs2

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

Scale at A3: 1:50,000

0

500

1,000

1,500

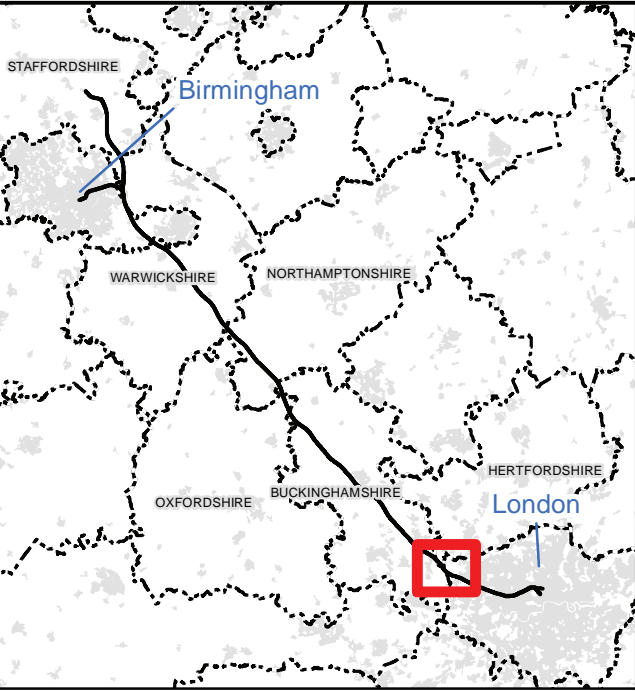
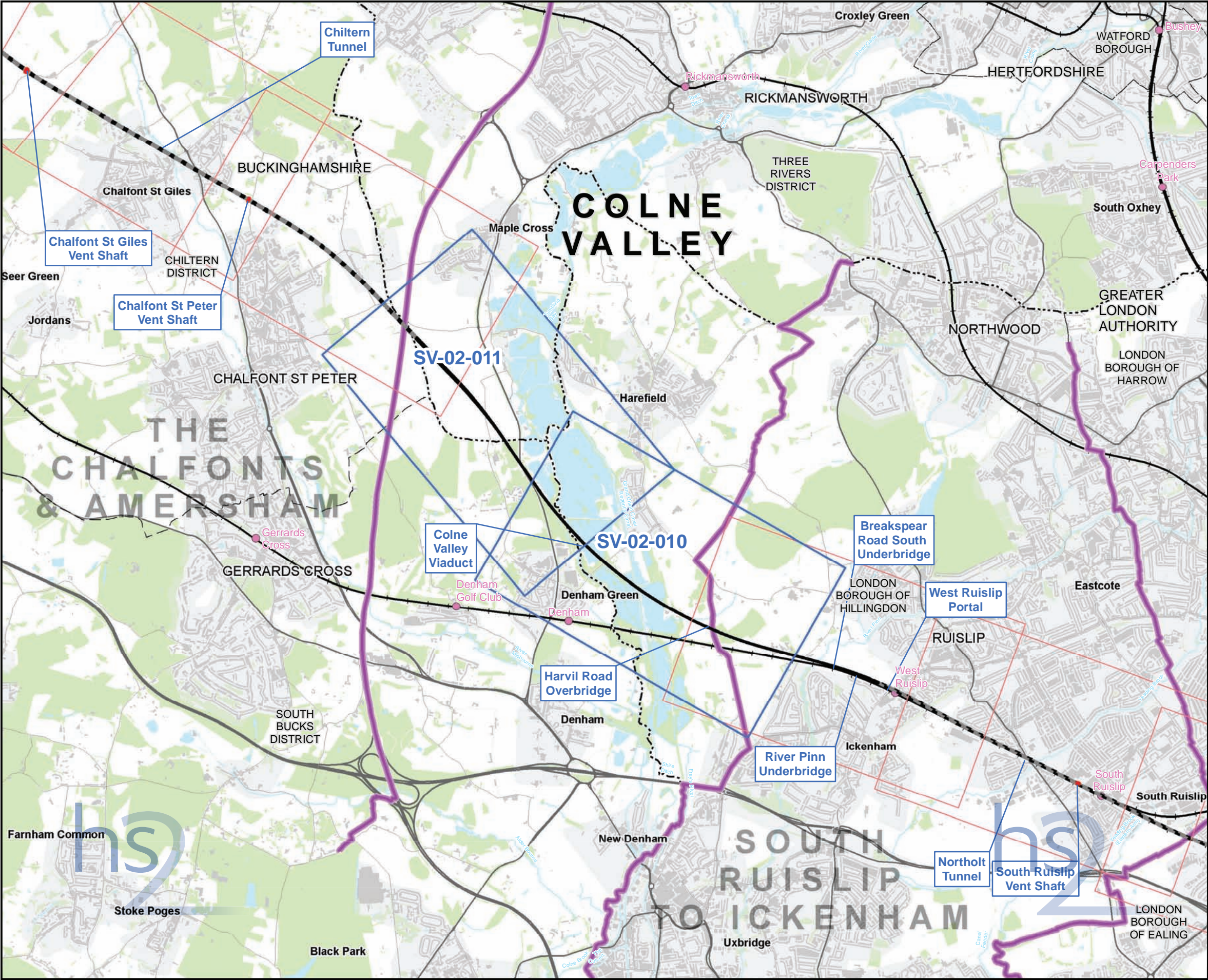
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Doc Number: C250-ARP-EV-MAP-000-004064--P04.00

Date: 29/10/13





**Map Series Information:**

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

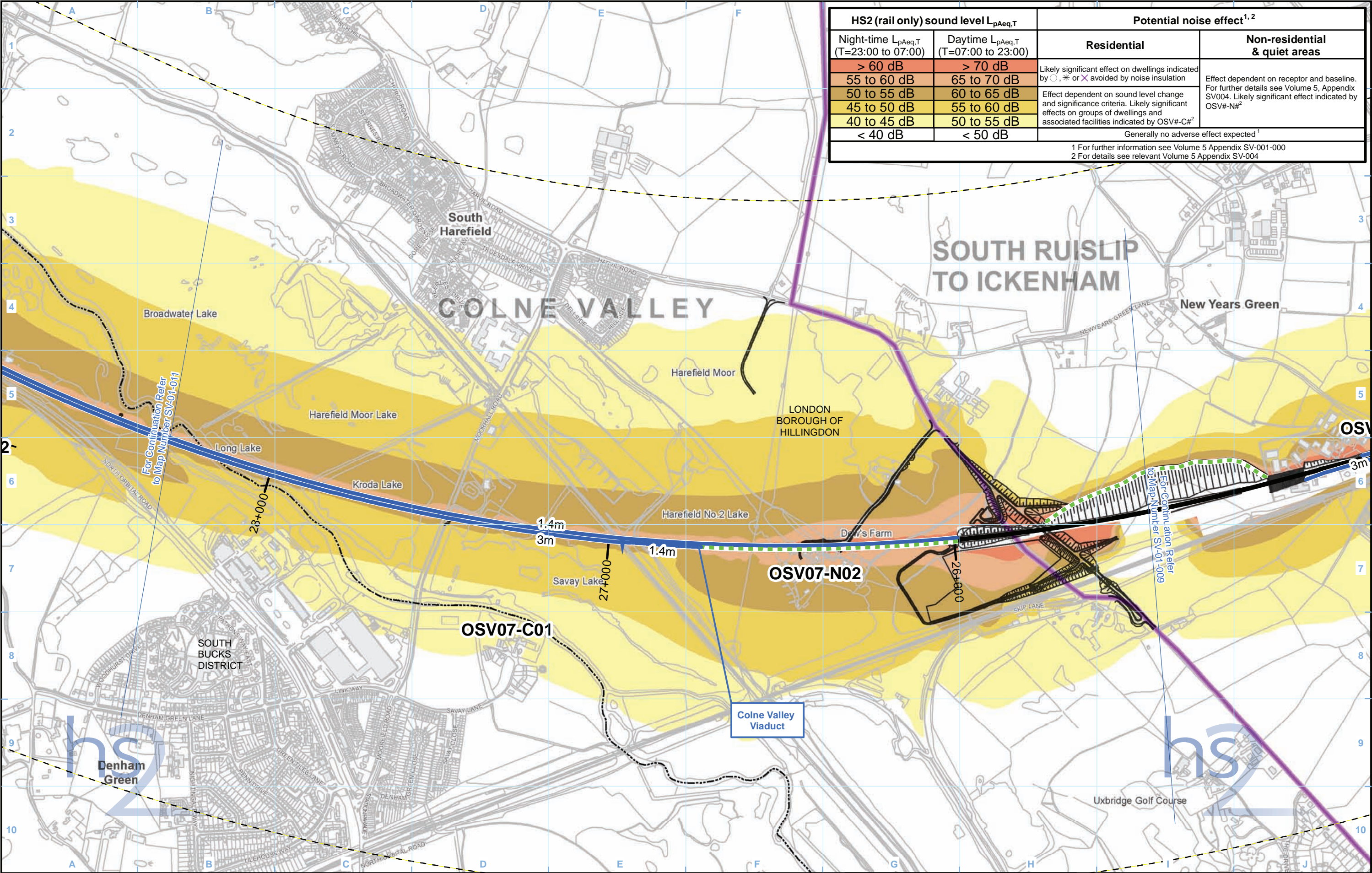
**Main Map Legend**

	Route in tunnel		Map sheets included in this community forum
	Route on surface		Map sheets not included in this community forum
	Depot, station, headhouse or portal building		
	Community forum boundary		
	Existing railway station		
	County boundary		
	District/Borough boundary		

Map Number	SV-02-INDEX-CFA7
Map Name	Index Map of: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)
	Community Forum Area CFA7: Colne Valley

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Doc Number: C250-ARP-EV-MAP-000-004089--P04.00	Date: 29/10/13	





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N#²
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C#²	Generally no adverse effect expected¹
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
¹ For further information see Volume 5 Appendix SV-001-000			
² For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)¹
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)¹
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)¹

\* Labelled with total barrier height above rail level

Map Number  
**SV-01-010**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA07:  
Colne Valley

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

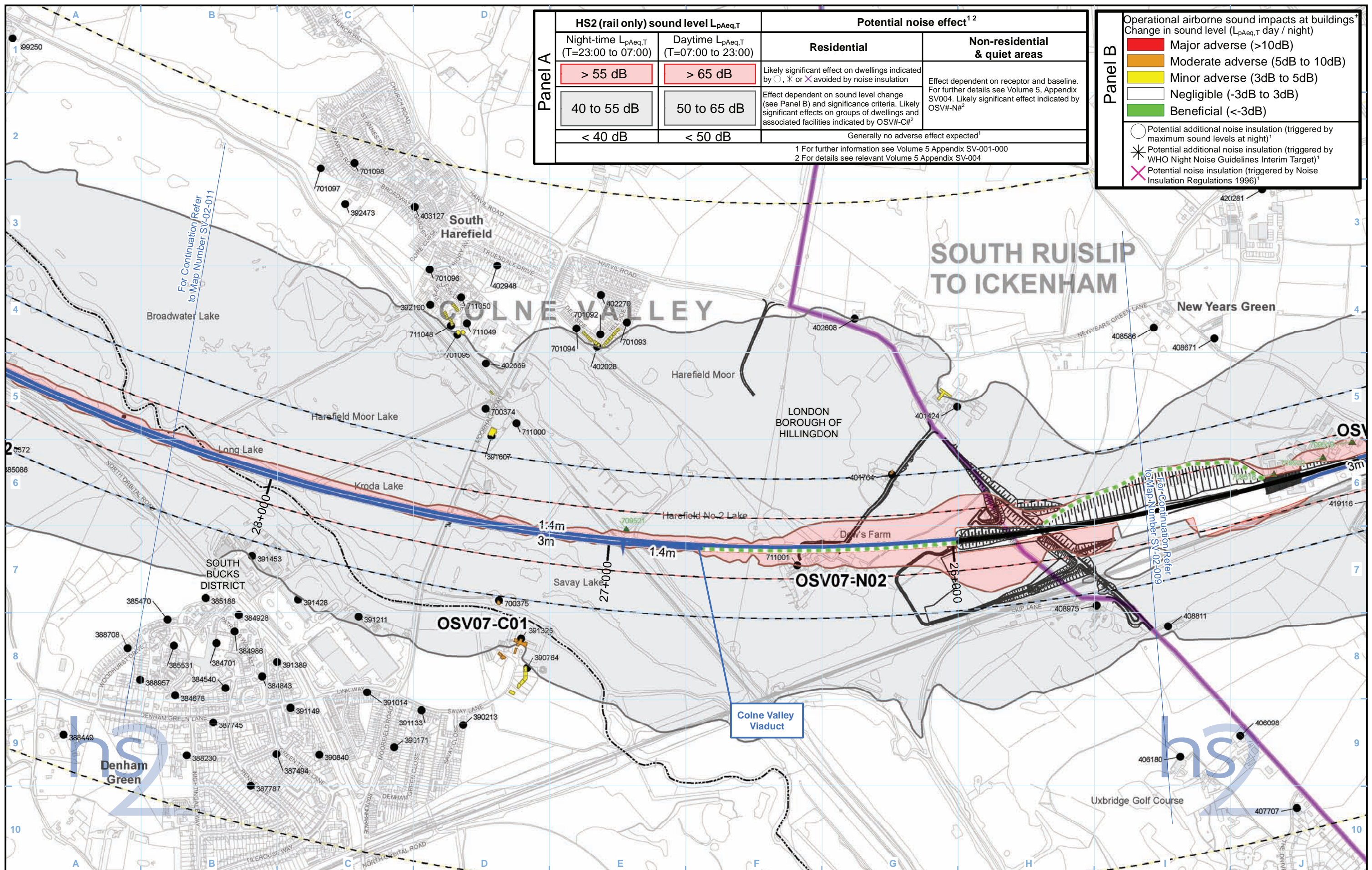
Scale at A3: 1:10,000

0 100 200 300 400  
Metres

Doc Number: C250-ARP-EV-MAP-000-003556

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N#
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C#	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-010

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA07: Colne Valley

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place, London SW1E 5DU.

Scale at A3: 1:10,000

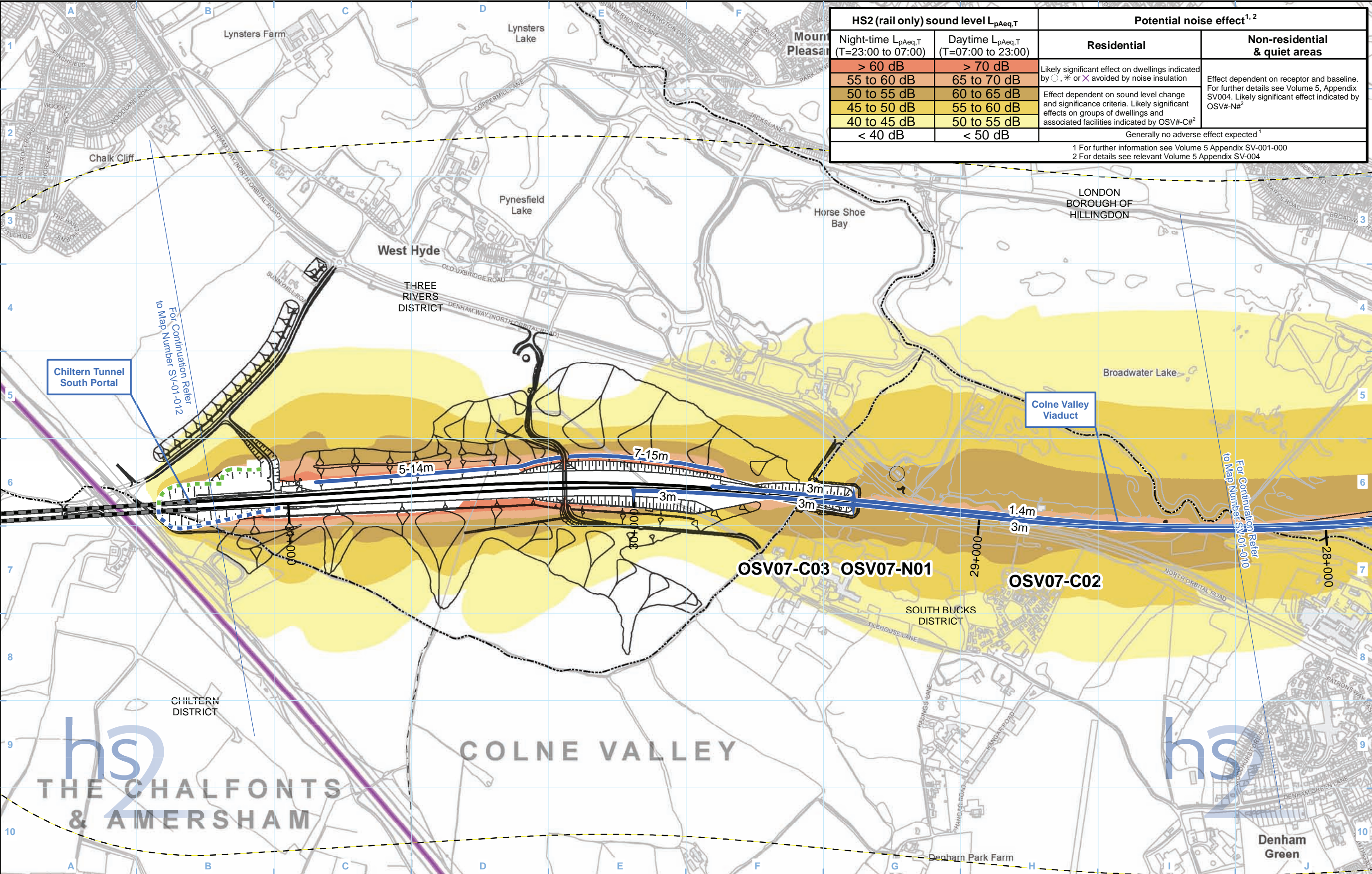
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Doc Number: C250-ARP-EV-MAP-000-003662

Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-011

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA07:  
Colne Valley



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Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

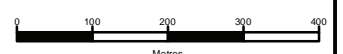
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Doc Number: C250-ARP-EV-MAP-000-003557

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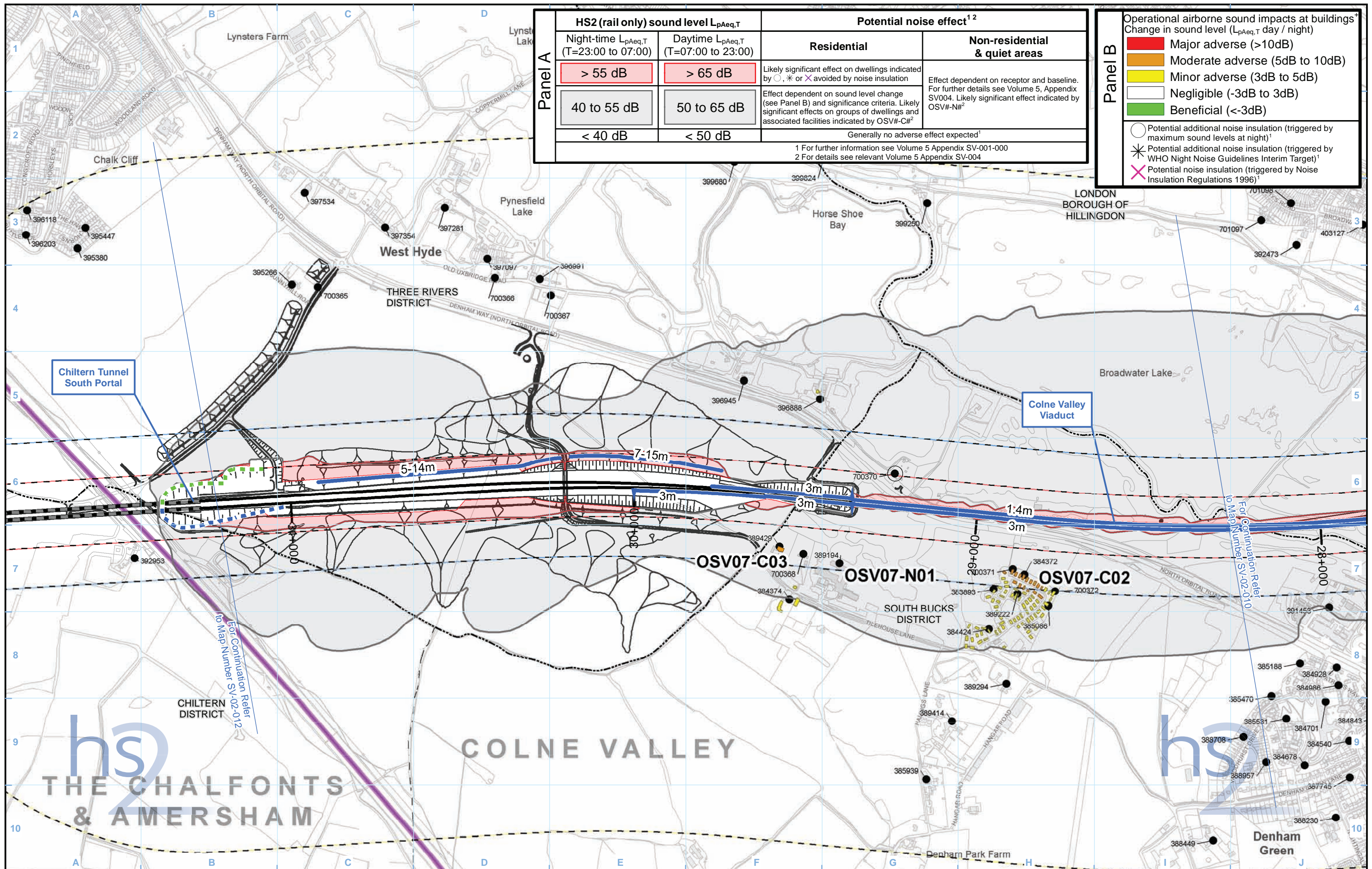


Scale at A3: 1:10,000



Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1,2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

**Map Number**  
SV-02-011

**Map Name**  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

**Community Forum Area CFA07:**  
Colne Valley

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place, London SW1E 5DU.

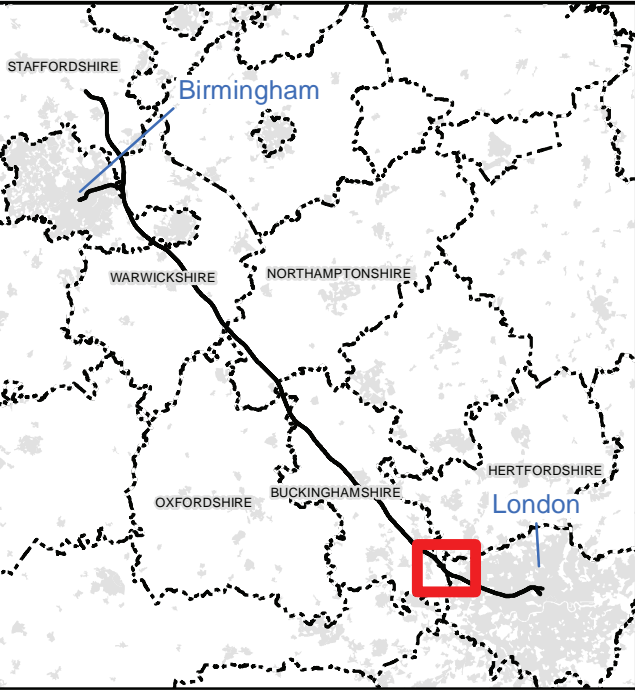
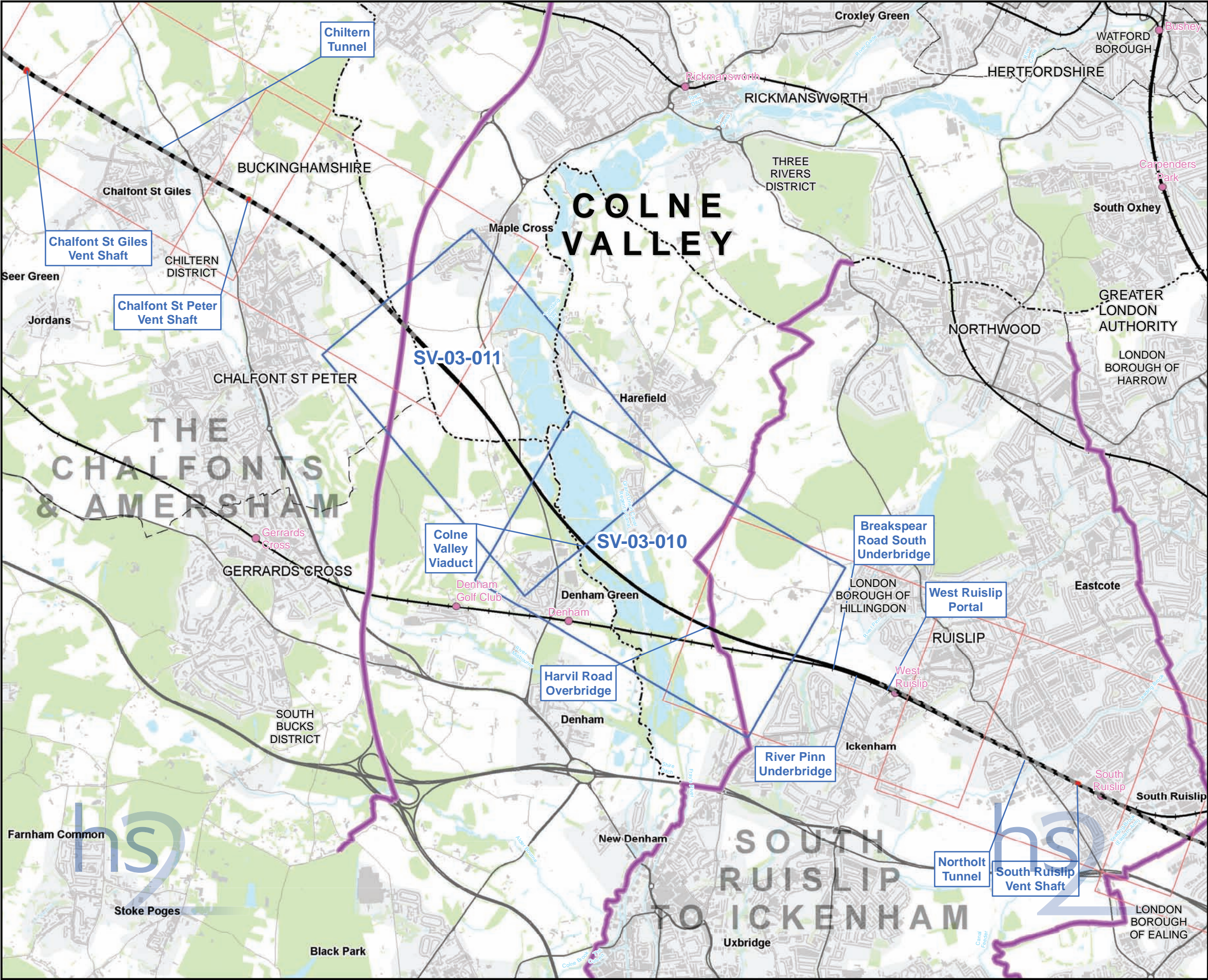
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**Doc Number:** C250-ARP-EV-MAP-000-003663

**Scale at A3:** 1:10,000

**Date:** 31/10/13





### Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

Map Name

Community Forum Area CFA7:

Colne Valley

Map Number

SV-03-INDEX-CFA7

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA7:

Colne Valley

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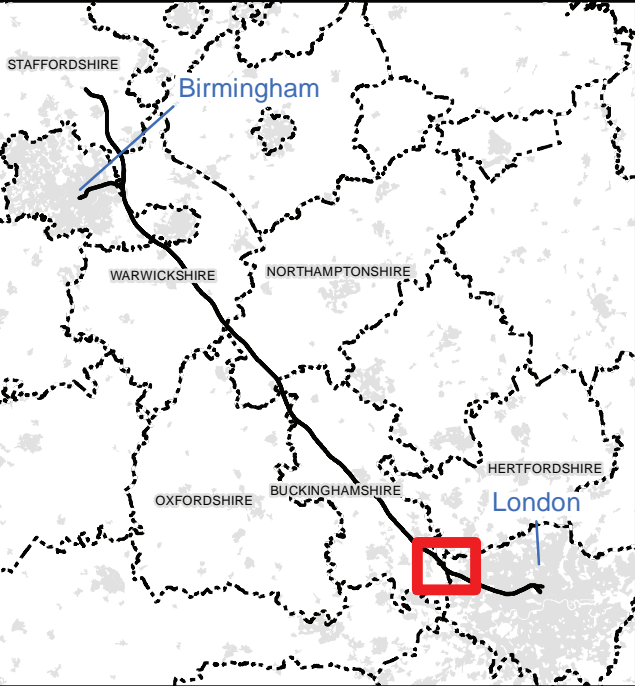
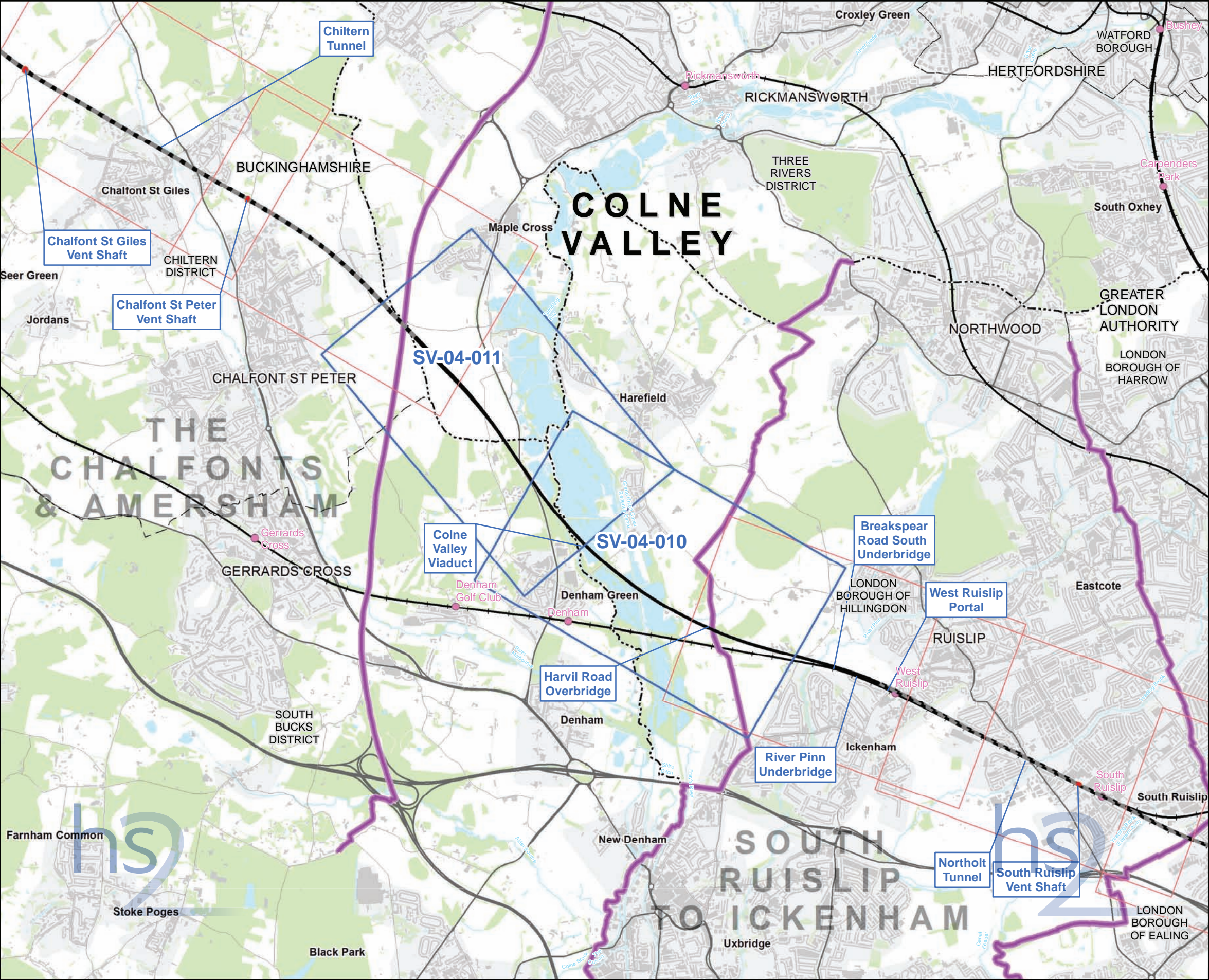
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Doc Number: C250-ARP-EV-MAP-000-004115-P06.00

Date: 29/10/13





**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA7

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA7:  
Colne Valley

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Doc Number: C250-ARP-EV-MAP-000-004141--P04.00

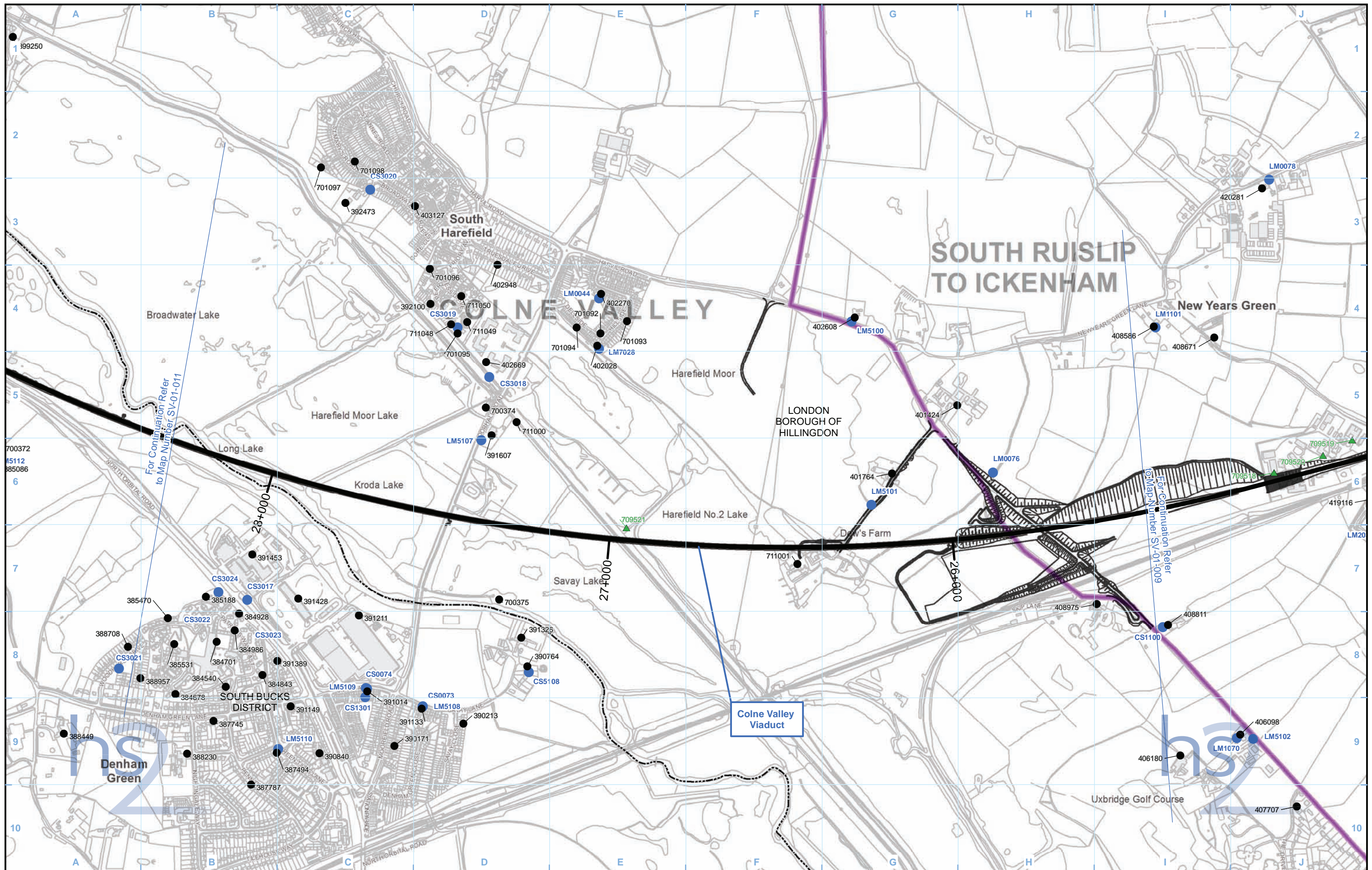
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Date: 29/10/13



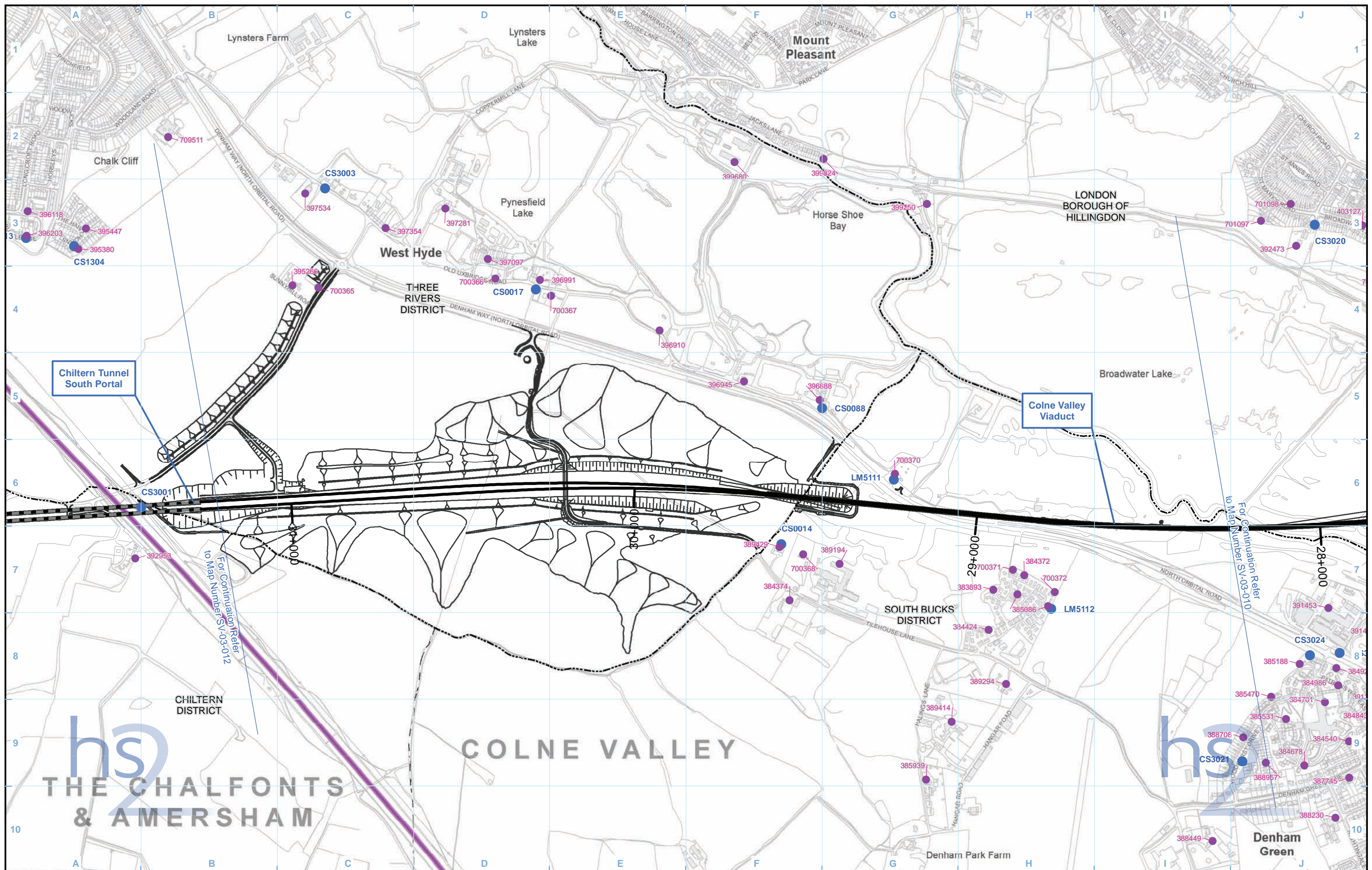






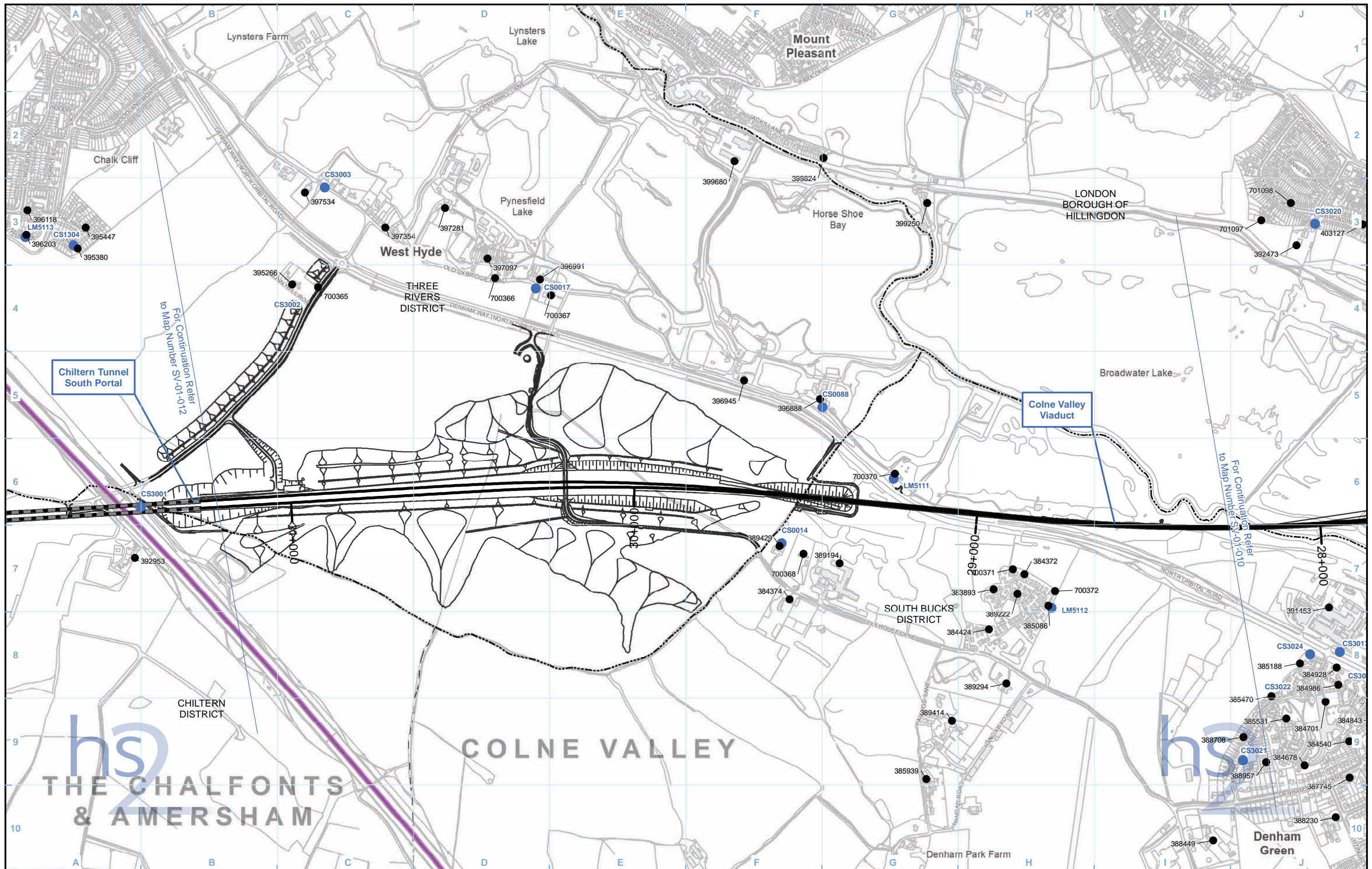
<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Airborne sound assessment location</li><li>Airborne sound and vibration assessment location</li><li>Ground-borne sound and/or vibration assessment location</li><li>Airborne sound, ground-borne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		labelled with Assessment Location ID reference number (for details of the assessment results see Vol 5 Appendix SV004)  (labelled with Measurement Location reference code)	Map Number <b>SV-04-010</b>	 HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.  Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.  © Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.  Scale at A3: 1:10,000  <b>Date: 29/10/13</b>
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>			Map Name <b>Assessment and Monitoring Locations for Operational Sound, Noise &amp; Vibration Assessments</b>	





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-03-011</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p>Doc Number: C250-ARP-EV-MAP-000-003764</p> <p>Date: 29/10/13</p>
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>			Map Name <b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>	





Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

Legend - Sound related features

Airborne sound assessment location

Airborne sound and vibration assessment location

Ground-borne sound and/or vibration assessment location

Airborne sound, ground-borne sound and vibration assessment location

Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number

SV-04-011

Map Name

Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA07:  
Colne Valley

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London SW1E 5DU.

Scale at A3: 1:10,000

0

100

200

300

400

Metres

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Doc Number: C250-ARP-EV-MAP-000-003865

Date: 29/10/13

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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

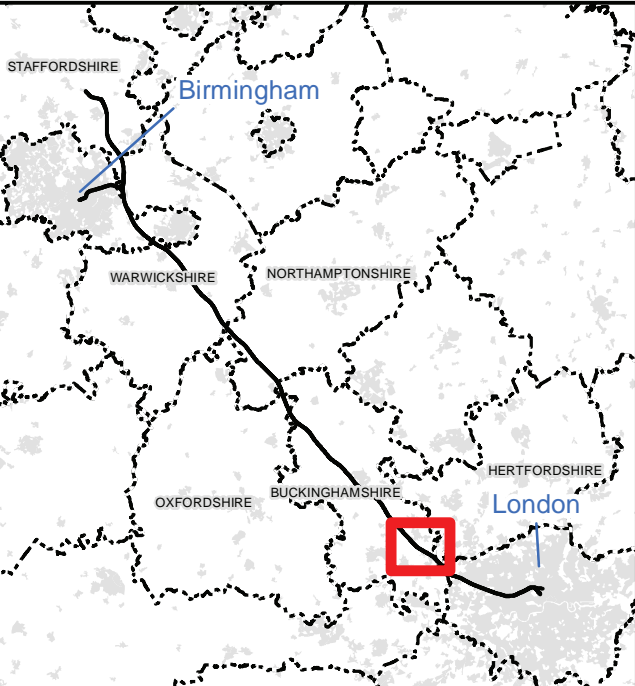
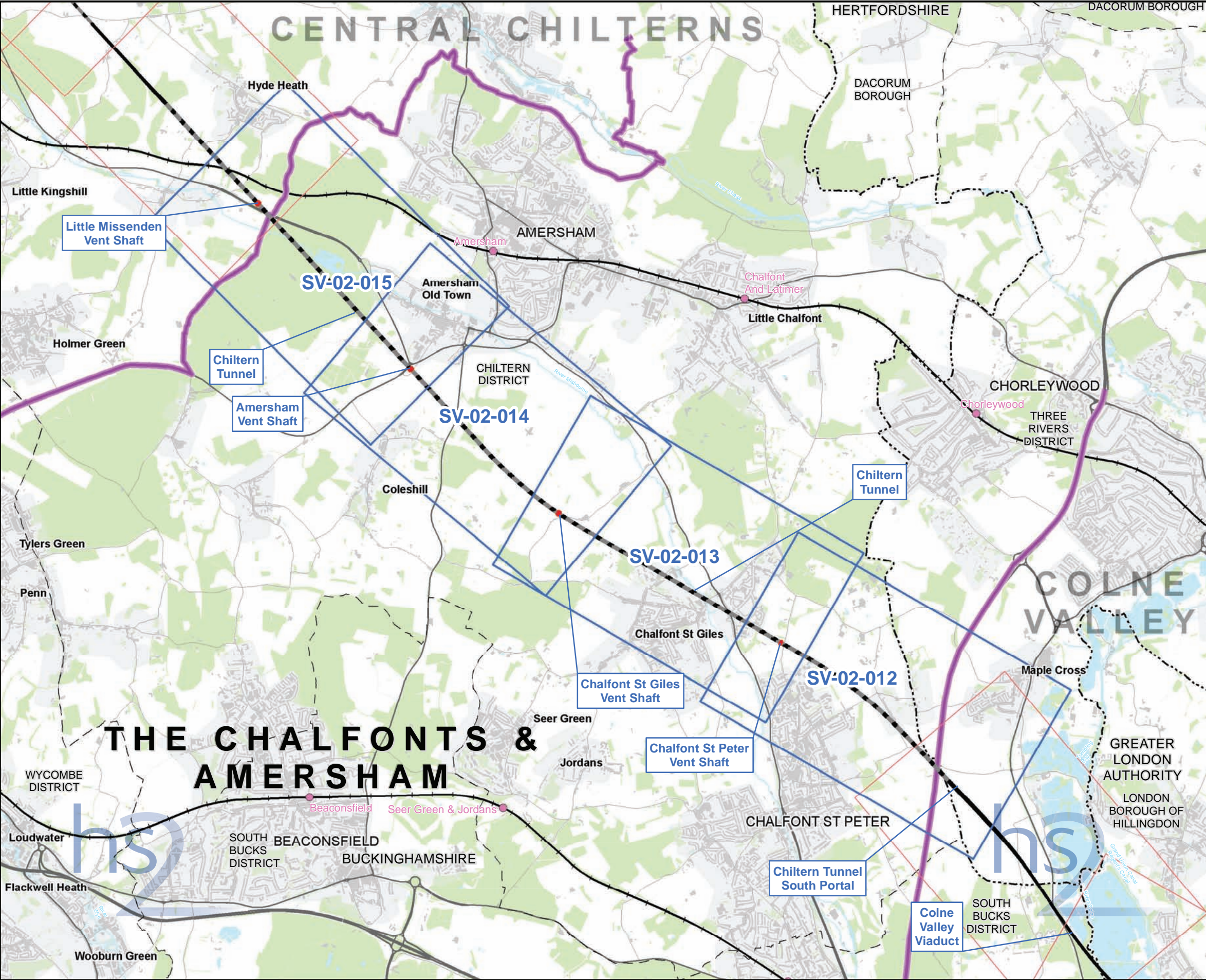
CFA8 | The Chalfonts and Amersham

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





### Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-02-INDEX-CFA8

Map Name

Index Map of:  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA8:  
The Chalfonts & Amersham

hs2

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Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

Scale at A3: 1:50,000

0

500

1,000

1,500

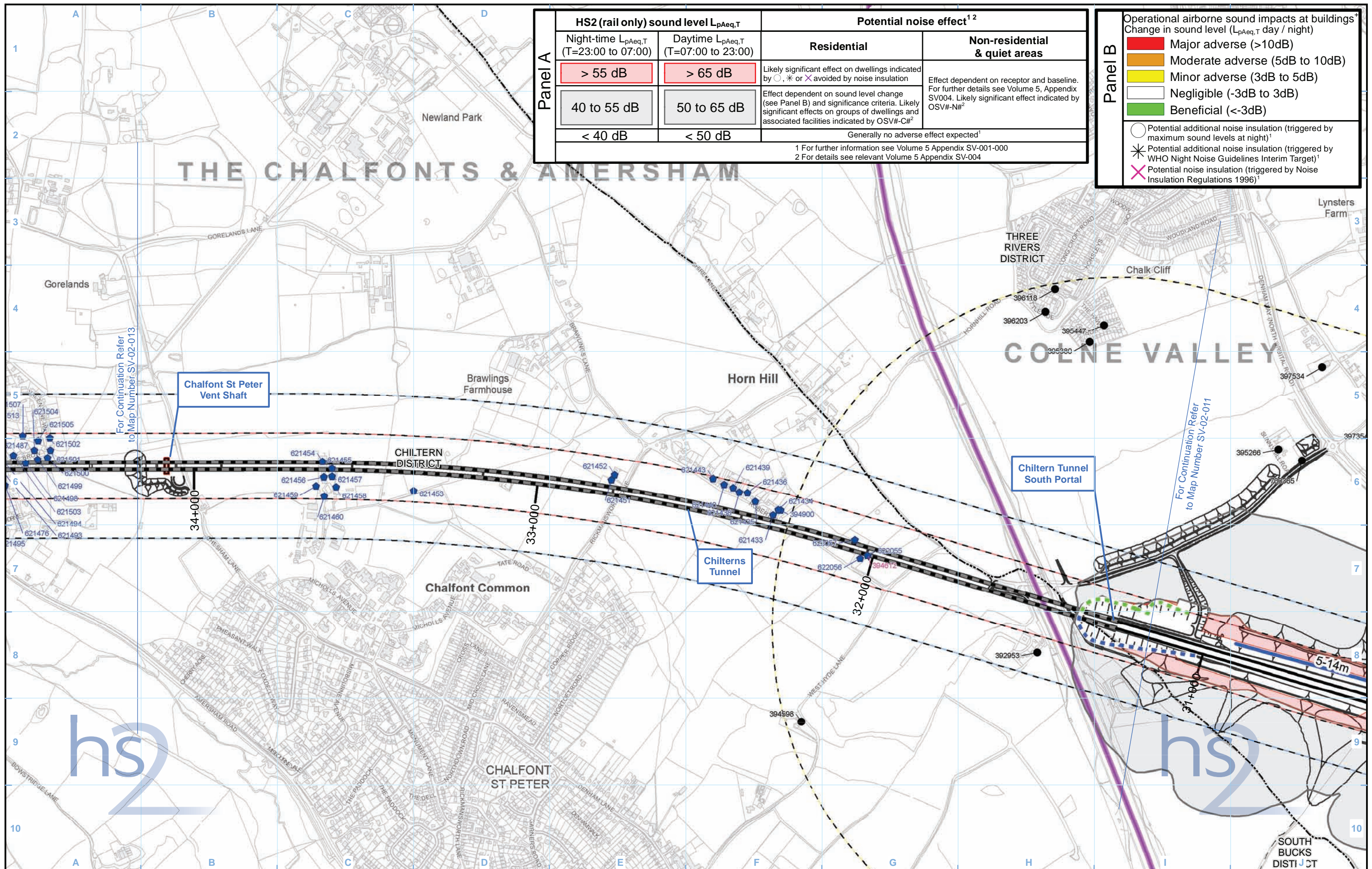
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Metres

Doc Number: C250-ARP-EV-MAP-000-004090--P04.00

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings* Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
  - Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number: SV-02-012

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA08: The Chalfonts & Amersham

hs2

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Registered office: Eland House, Bressenden Place, London SW1E 5DU.

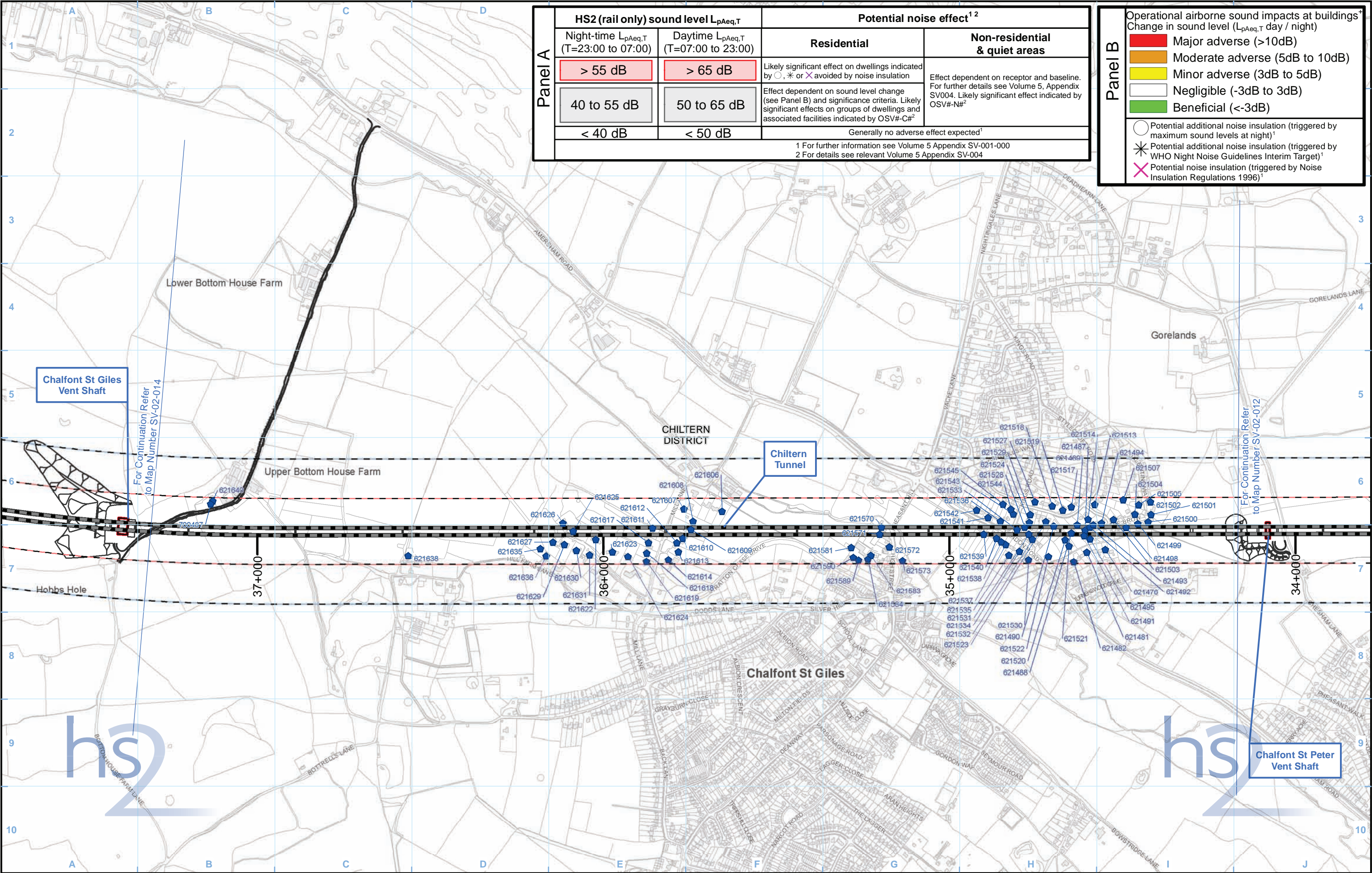
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Doc Number: C250-ARP-EV-MAP-000-003664

Date: 31/10/13





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B

Operational airborne sound impacts at buildings<sup>+</sup>  
Change in sound level (L<sub>pAeq,T</sub> day / night)

Major adverse (>10dB)

Moderate adverse (5dB to 10dB)

Minor adverse (3dB to 5dB)

Negligible (-3dB to 3dB)

Beneficial (<-3dB)

○

Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

✱

Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

✕

Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks: Non engineering earthworks:

Embankment

Cutting

Embankment

Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

Committed developments (label as CFA#/#)

Envisaged mitigation to avoid / reduce significant noise effects:  
Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:  
Other environmental features e.g. landscaping

Engineering e.g. cuttings

Airborne sound study area

Ground-borne sound & vibration study area (residential and non-residential)

Ground-borne sound & vibration study area (highly sensitive non-residential)

Airborne sound assessment location

Airborne sound and vibration assessment location

Ground-borne sound and/or vibration assessment location

Airborne sound, ground-borne sound and vibration assessment location

Minor ground-borne noise or vibration impact\*

Map Number

SV-02-013

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA08:  
The Chalfonts & Amersham

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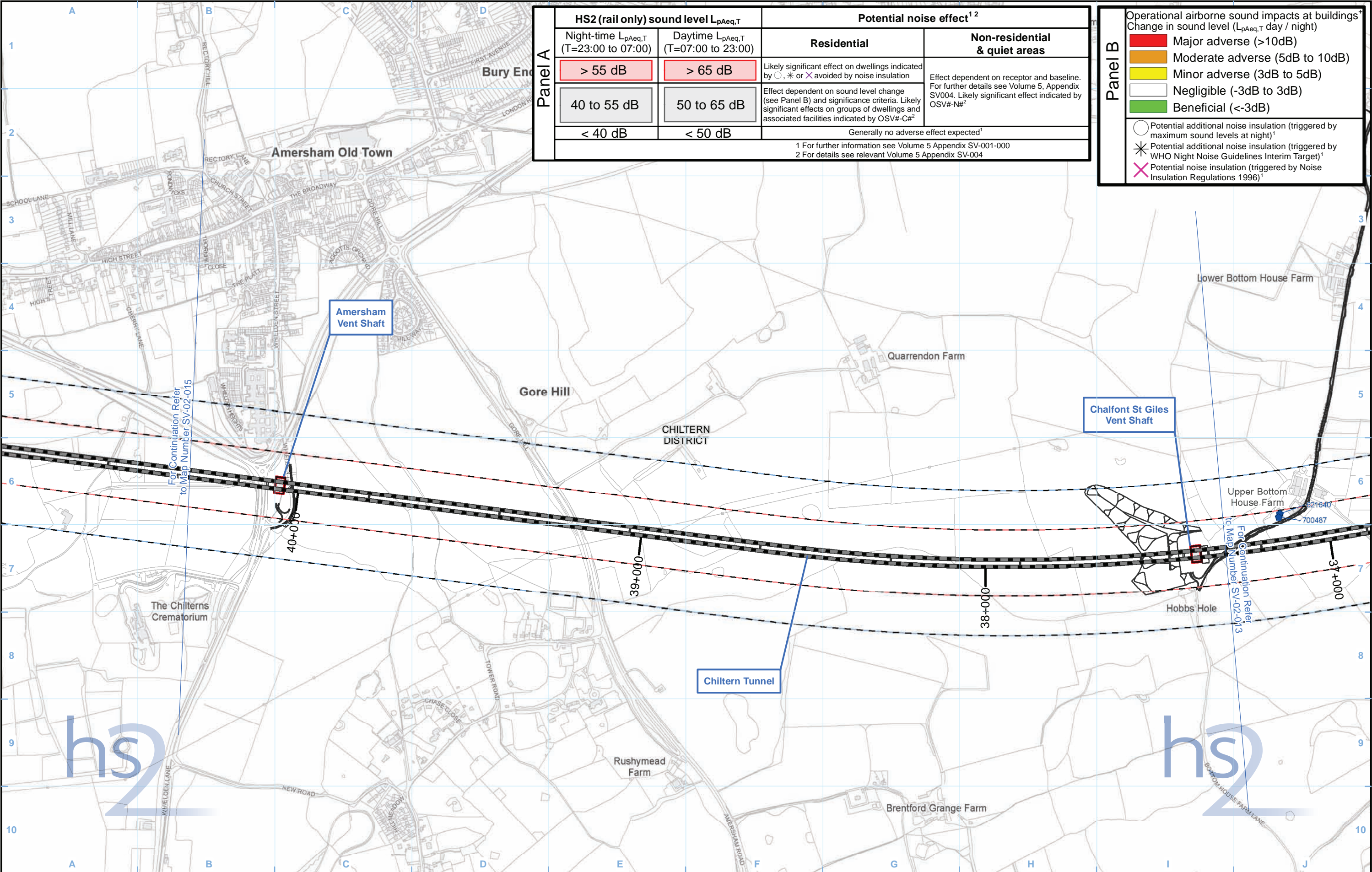
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Scale at A3: 1:10,000

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Metres

Date: 31/10/13





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B

Operational airborne sound impacts at buildings<sup>+</sup>  
Change in sound level (L<sub>pAeq,T</sub> day / night)

Major adverse (>10dB)

Moderate adverse (5dB to 10dB)

Minor adverse (3dB to 5dB)

Negligible (-3dB to 3dB)

Beneficial (<-3dB)

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

\* Residential buildings only

\* Labelled with total barrier height above rail level

Legend - Sound related features

Committed developments (label as CFA##)

Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

Other environmental features e.g. landscaping

Engineering e.g. cuttings

Airborne sound study area

Ground-borne sound & vibration study area (residential and non-residential)

Ground-borne sound & vibration study area (highly sensitive non-residential)

Airborne sound assessment location

Airborne sound and vibration assessment location

Ground-borne sound and/or vibration assessment location

Airborne sound, ground-borne sound and vibration assessment location

Minor ground-borne noise or vibration impact\*

Map Number

SV-02-014

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA08: The Chalfonts & Amersham

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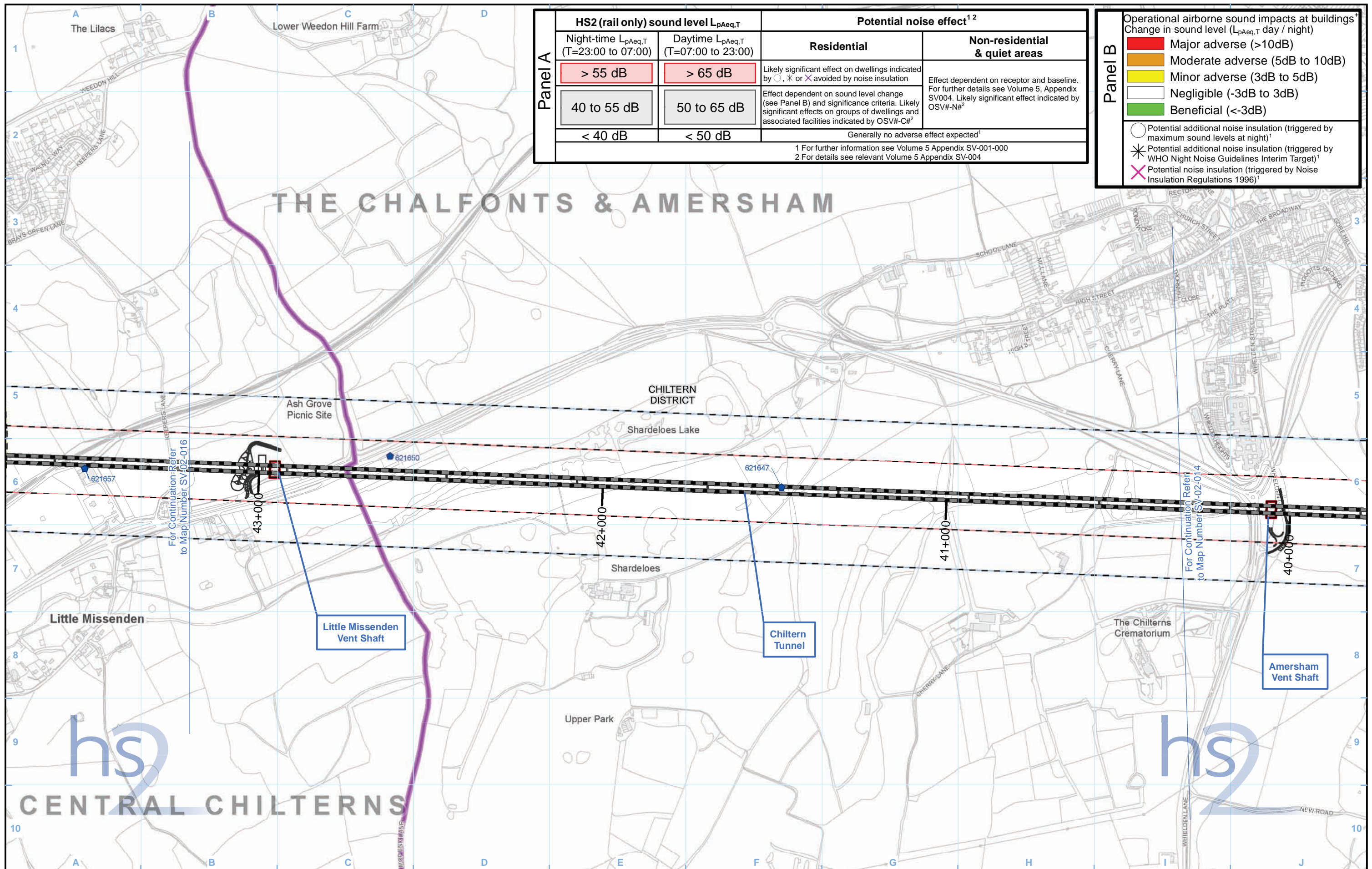
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Date: 31/10/13

North arrow





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
Beneficial (<-3dB)		
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only

\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-015

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA08:  
The Chalfonts & Amersham

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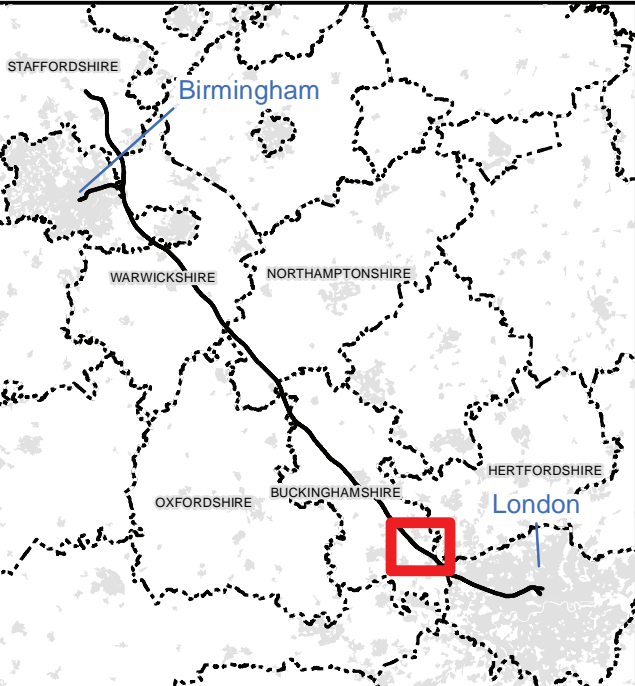
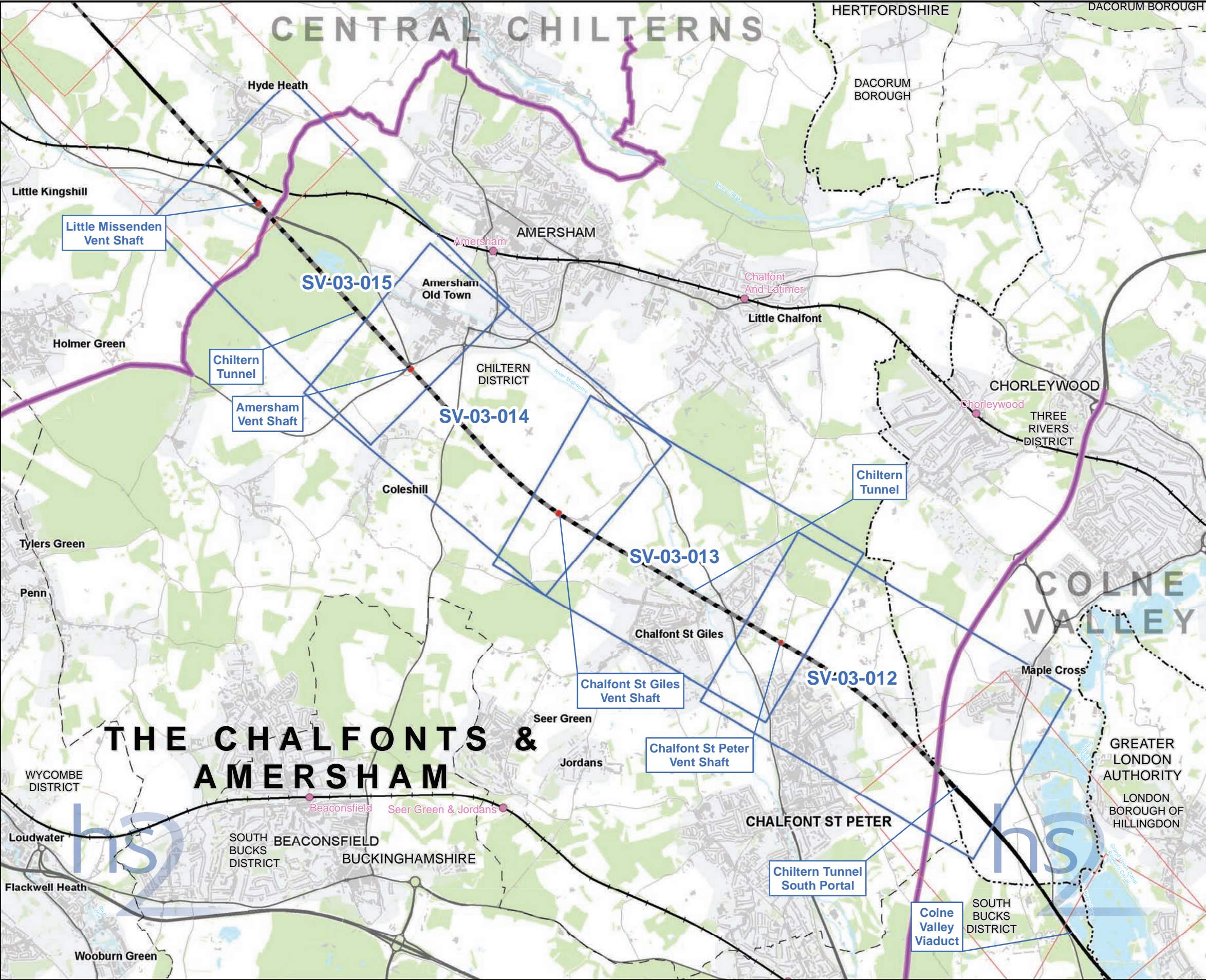
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Metres

Date: 31/10/13

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### Map Series Information:

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

— Route in tunnel

— Route on surface

Depot, station, headhouse or portal building

— Community forum boundary

● Existing railway station

--- County boundary

--- District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map NumberSV-03-INDEX-CFA8

Map NameIndex Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA8:  
The Chalfonts & Amersham

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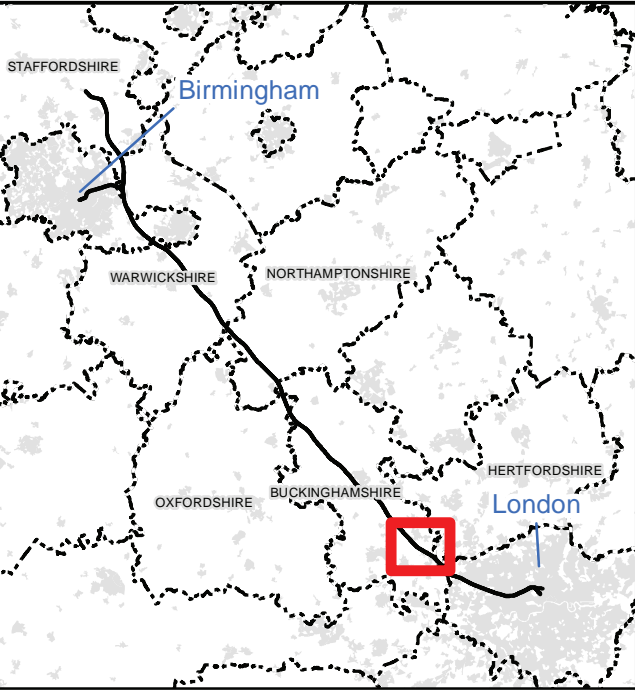
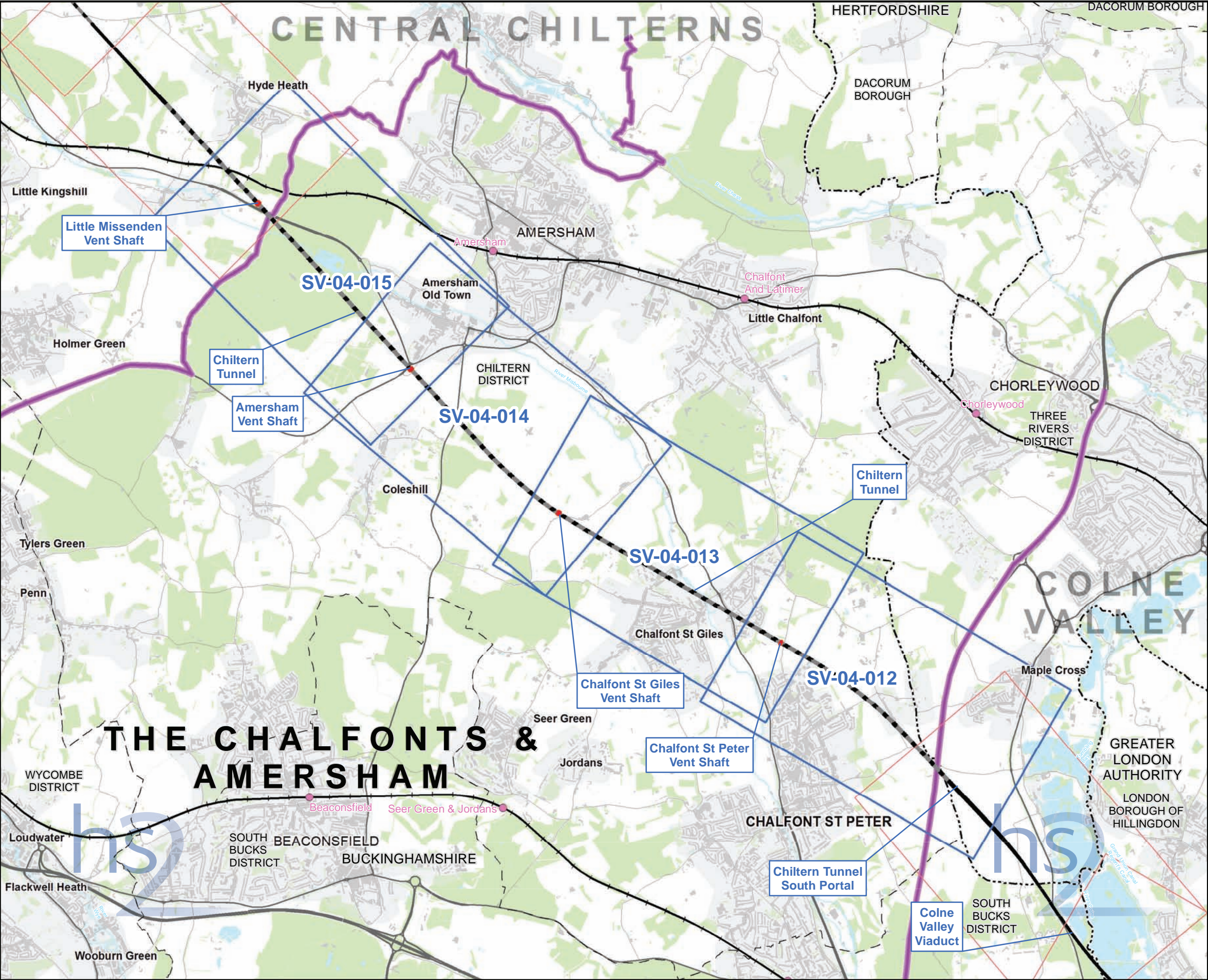
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**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

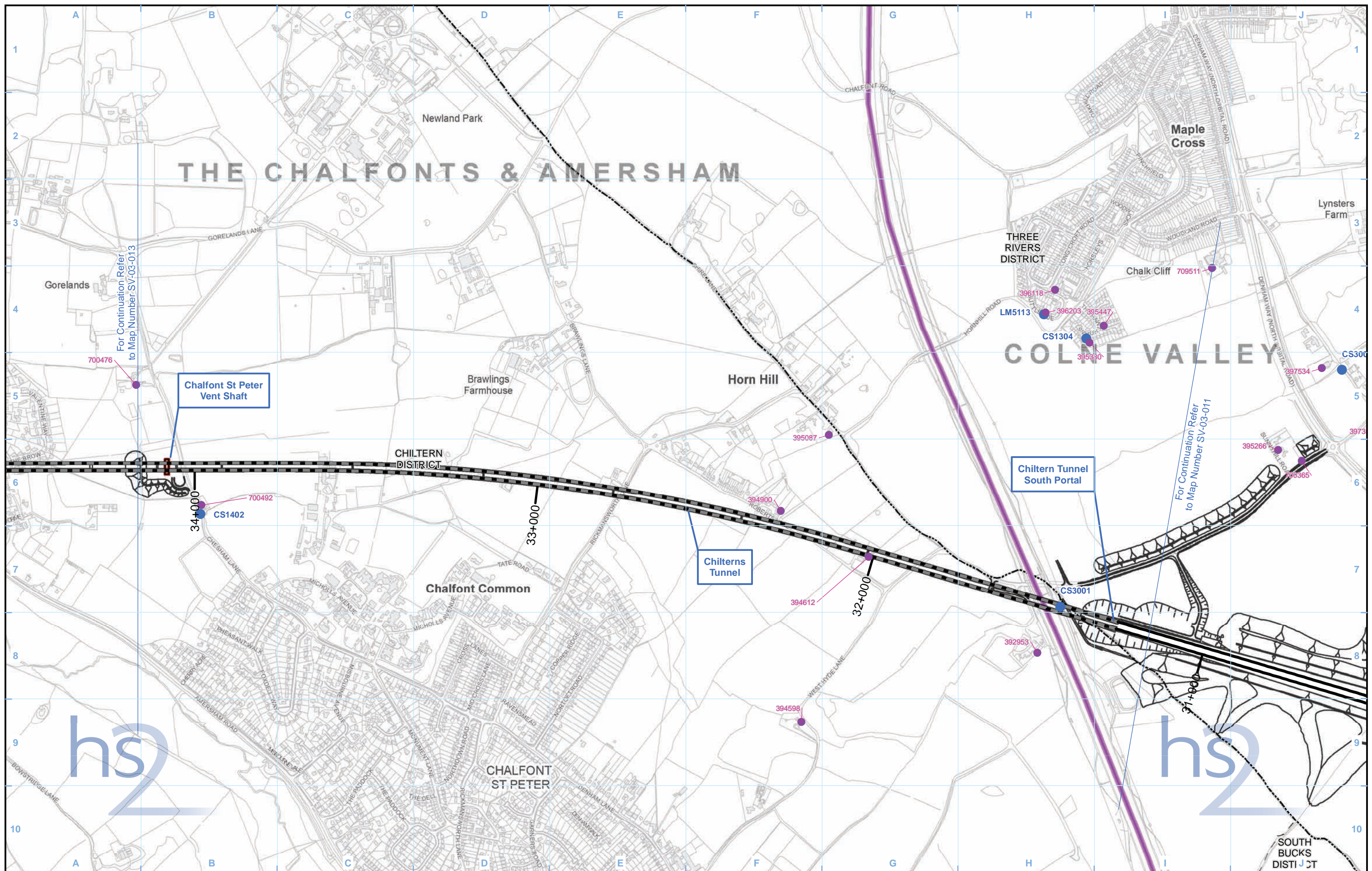
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**Main Map Legend**


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Map Name	Index Map of: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
	Community Forum Area CFA8: The Chalfonts & Amersham

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Doc Number: C250-ARP-EV-MAP-000-004142--P04.00		Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-012
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA08: The Chalfonts & Amersham	




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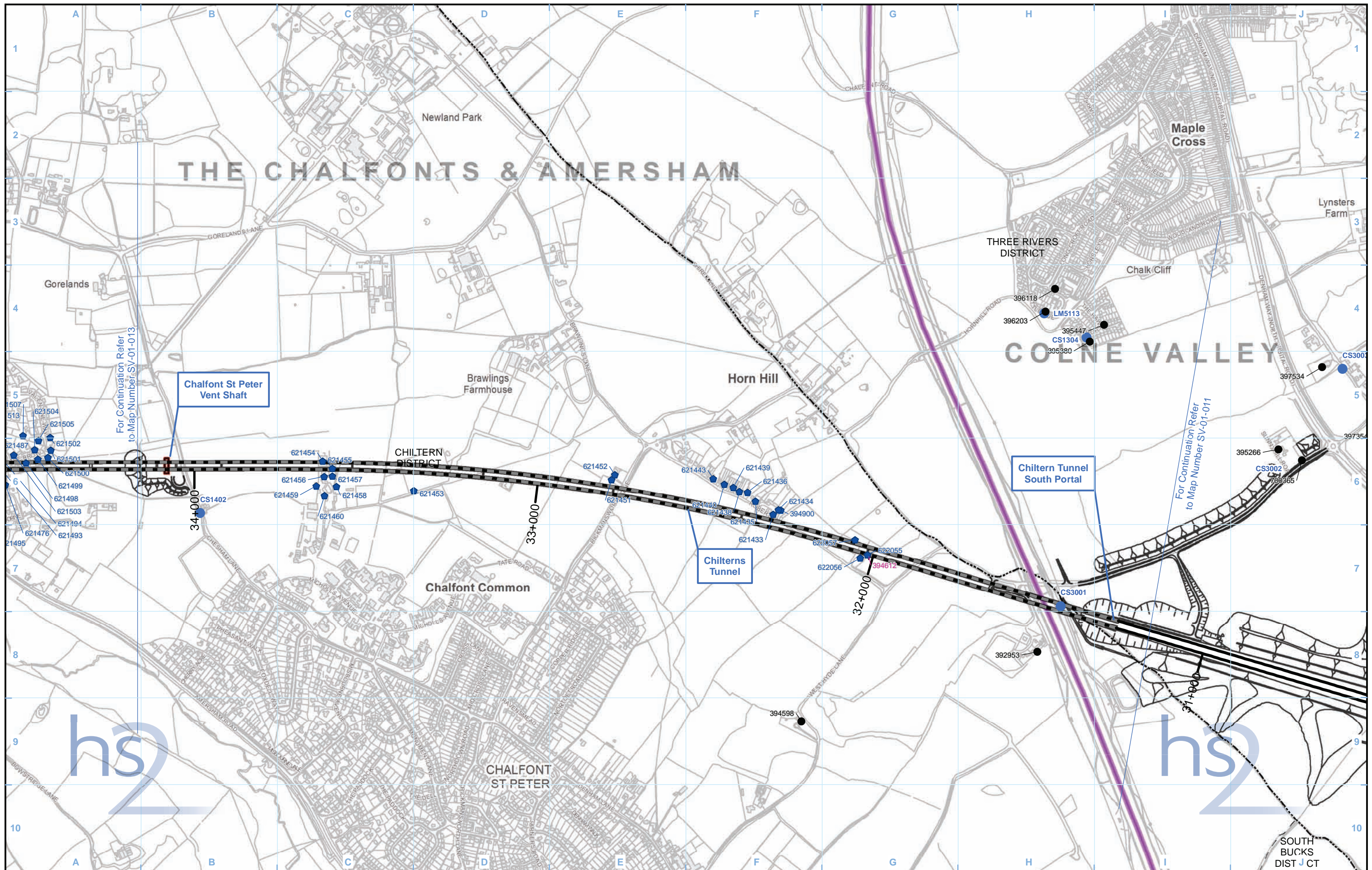
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Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

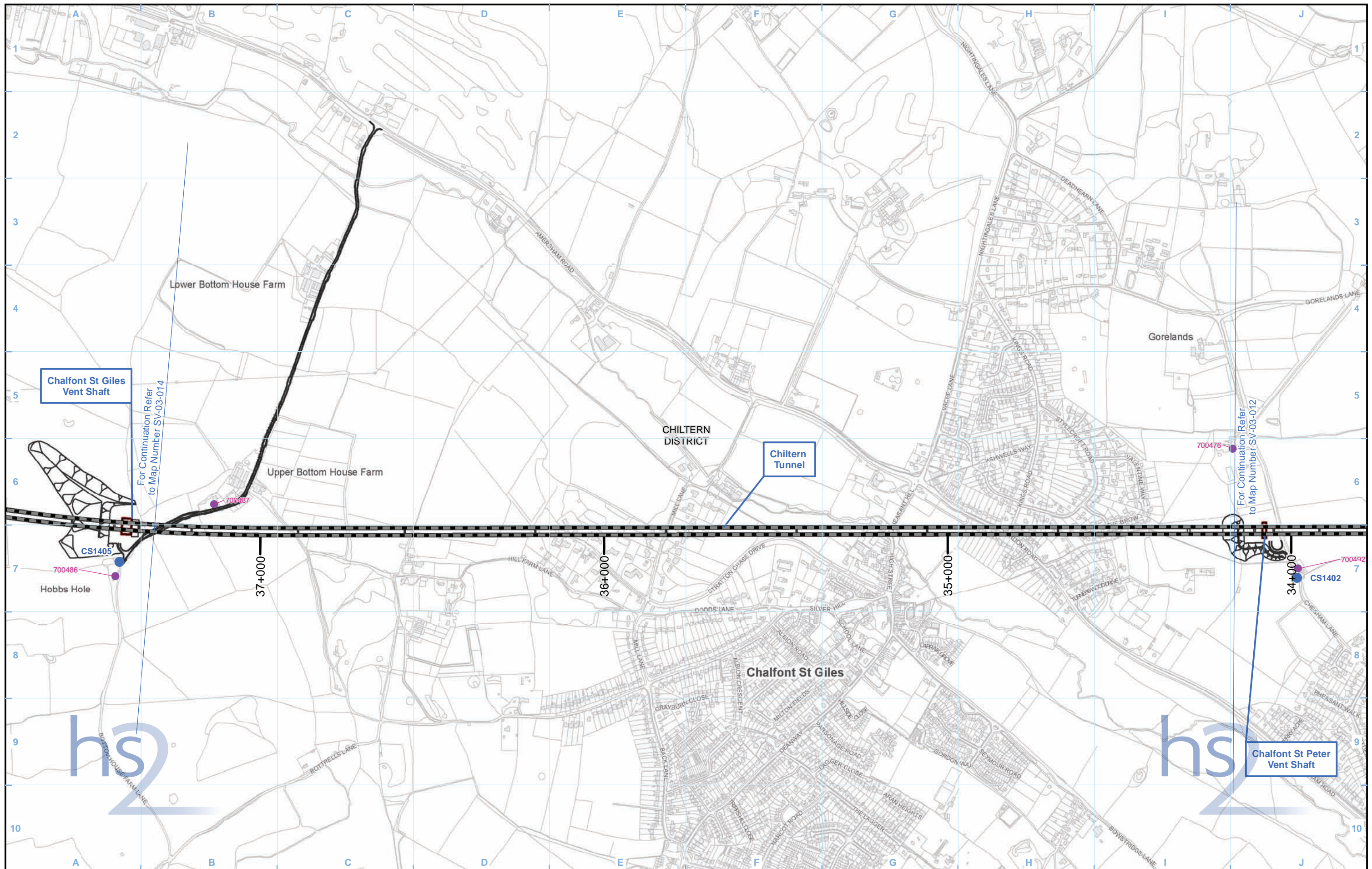
labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-012
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA08: The Chalfonts & Amersham	

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Doc Number: C250-ARP-EV-MAP-000-003866	Date: 29/10/13	





**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

labelled with Measurement Location reference code

Map Number

**SV-03-013**

Map Name

**Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments**

Community Forum Area CFA08:  
The Chalfonts & Amersham

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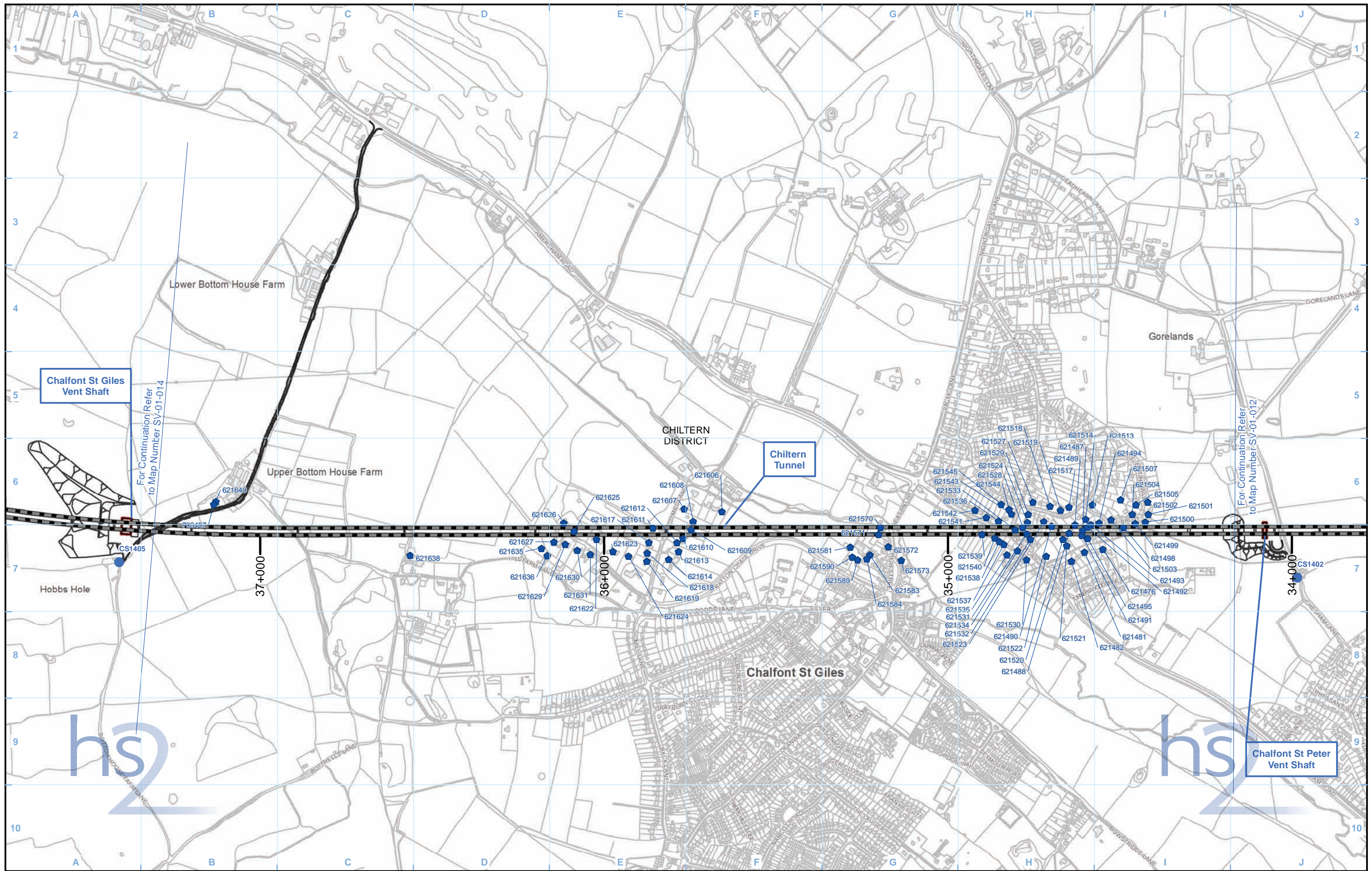
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0 100 200 300 400 Metres

**Date: 29/10/13**





**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map NumberSV-04-013

Map NameAssessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA08:  
The Chalfonts & Amersham

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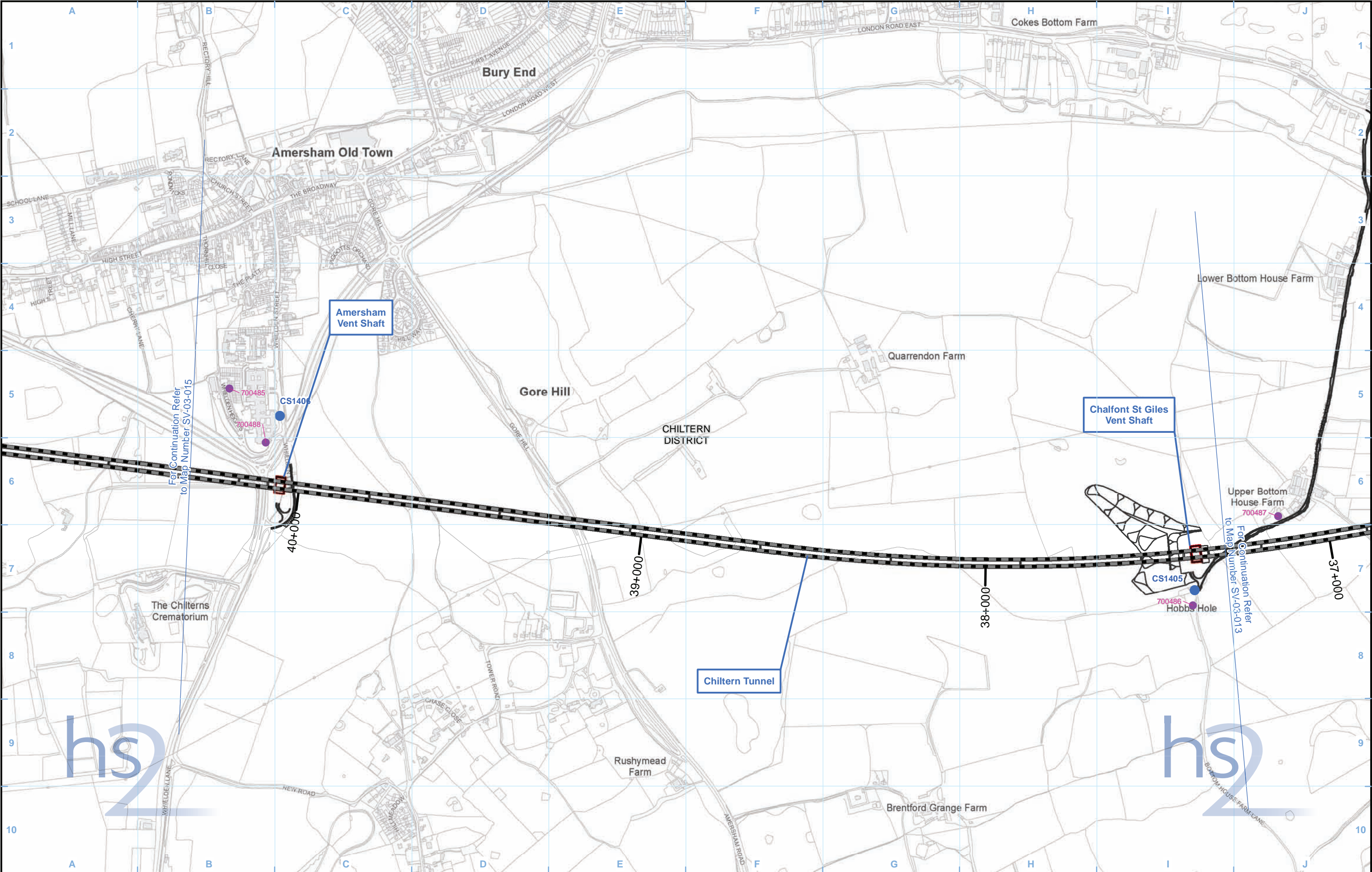
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Date: 29/10/13





**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

labelled with Measurement Location reference code

Map Number

SV-03-014

Map Name

Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA08:  
The Chalfonts & Amersham

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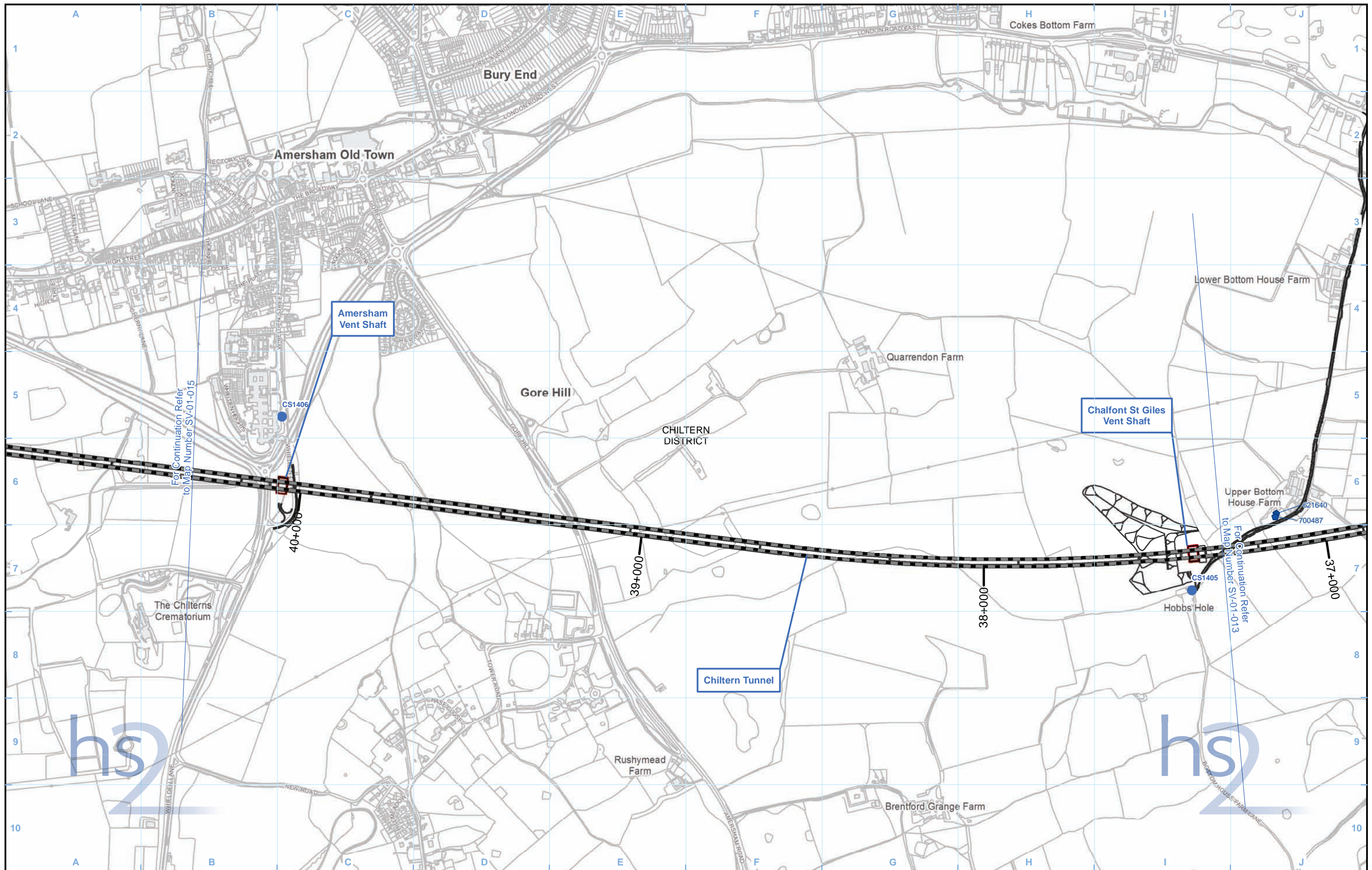
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 29/10/13





<b>Legend - General features</b>		<b>Legend - Sound related features</b>	
Route in bored tunnel	Embankment	Embankment	Airborne sound assessment location
Route in green tunnel	Cutting	Cutting	Airborne sound and vibration assessment location
Route on surface			Ground-borne sound and/or vibration assessment location
Depot, station, headhouse or portal building			Airborne sound, ground-borne sound and vibration assessment location
Community forum boundary			Baseline measurement locations
District/Borough boundary			
County boundary			

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-014
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA08: The Chalfonts & Amersham	

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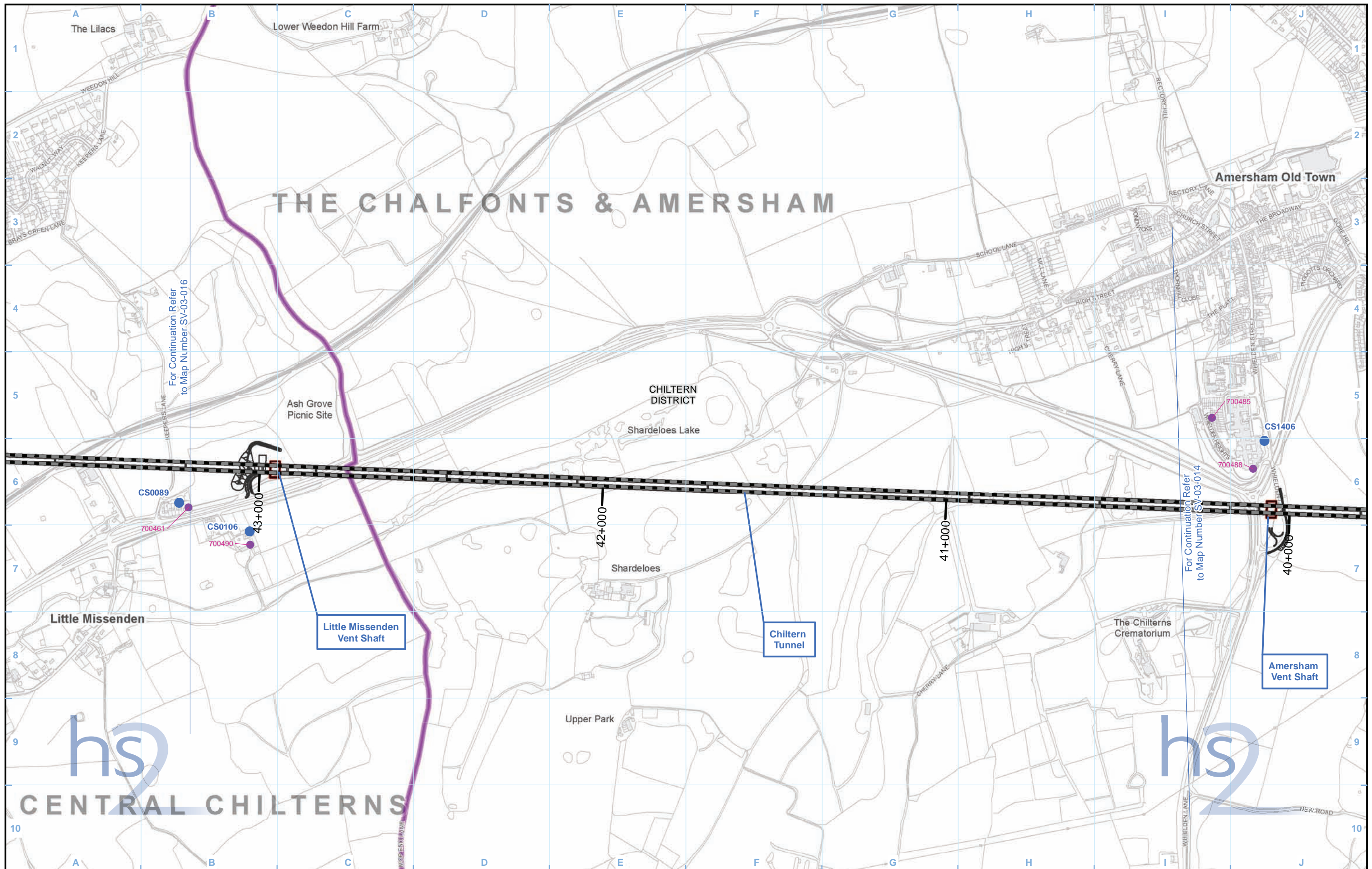
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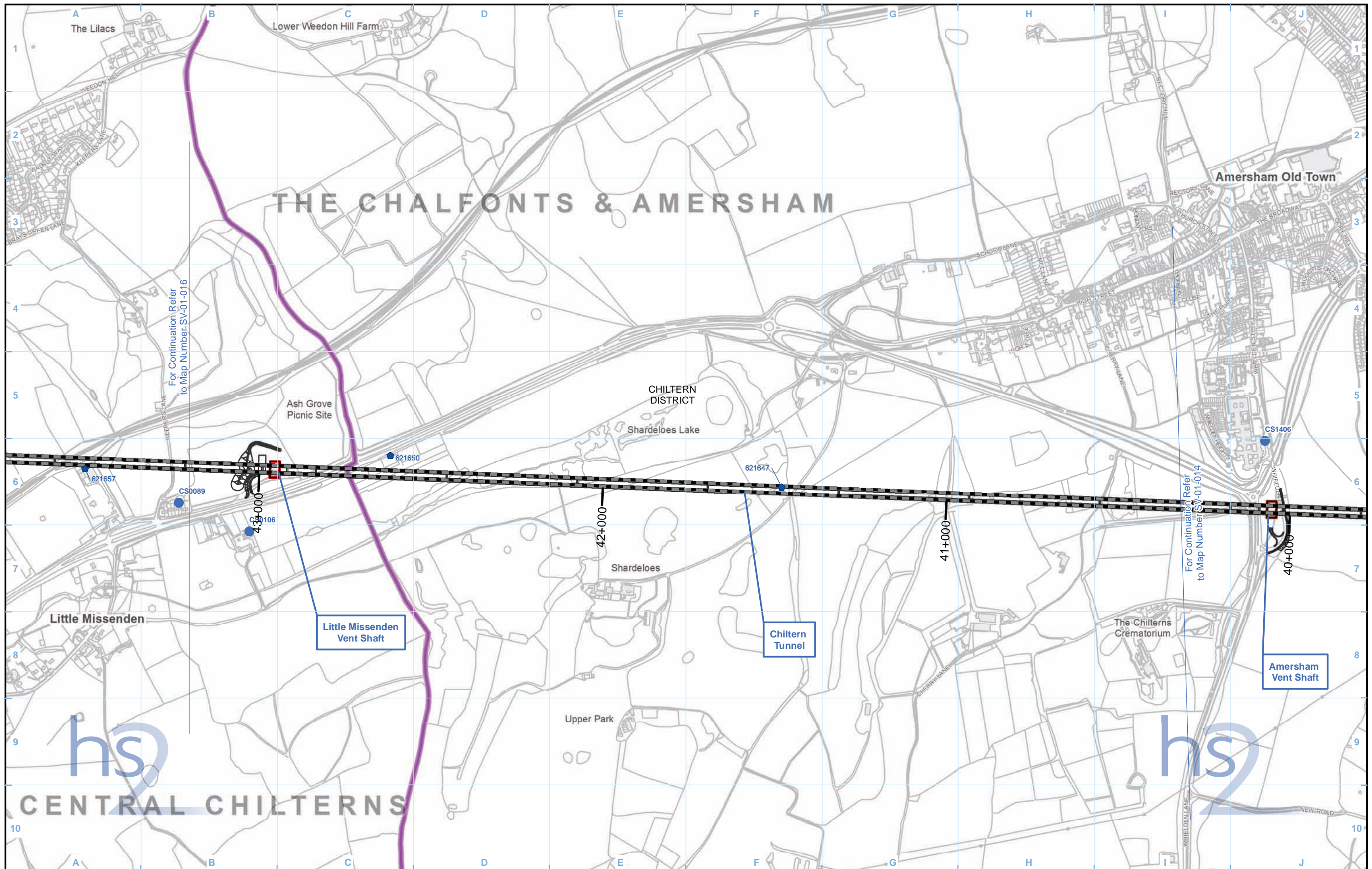
Date: 29/10/13





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Engineering earthworks:<ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul></li><li>Non engineering earthworks:<ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul></li><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-03-015</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791666. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p>Doc Number: C250-ARP-EV-MAP-000-003768</p> <p>Date: 29/10/13</p>
					Map Name <b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>	





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Airborne sound assessment location</li><li>Airborne sound and vibration assessment location</li><li>Ground-borne sound and/or vibration assessment location</li><li>Airborne sound, ground-borne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see Vol 5 Appendix SV004)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-04-015</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p>Doc Number: C250-ARP-EV-MAP-000-003869</p> <p>Date: 29/10/13</p>
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>			Map Name <b>Assessment and Monitoring Locations for Operational Sound, Noise &amp; Vibration Assessments</b>	
Community Forum Area CFA08: The Chalfonts & Amersham						

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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFAg | Central Chilterns

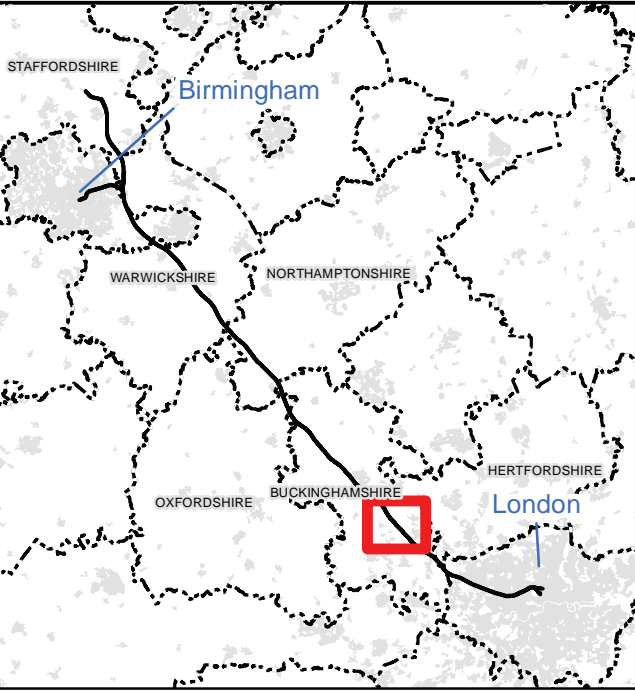
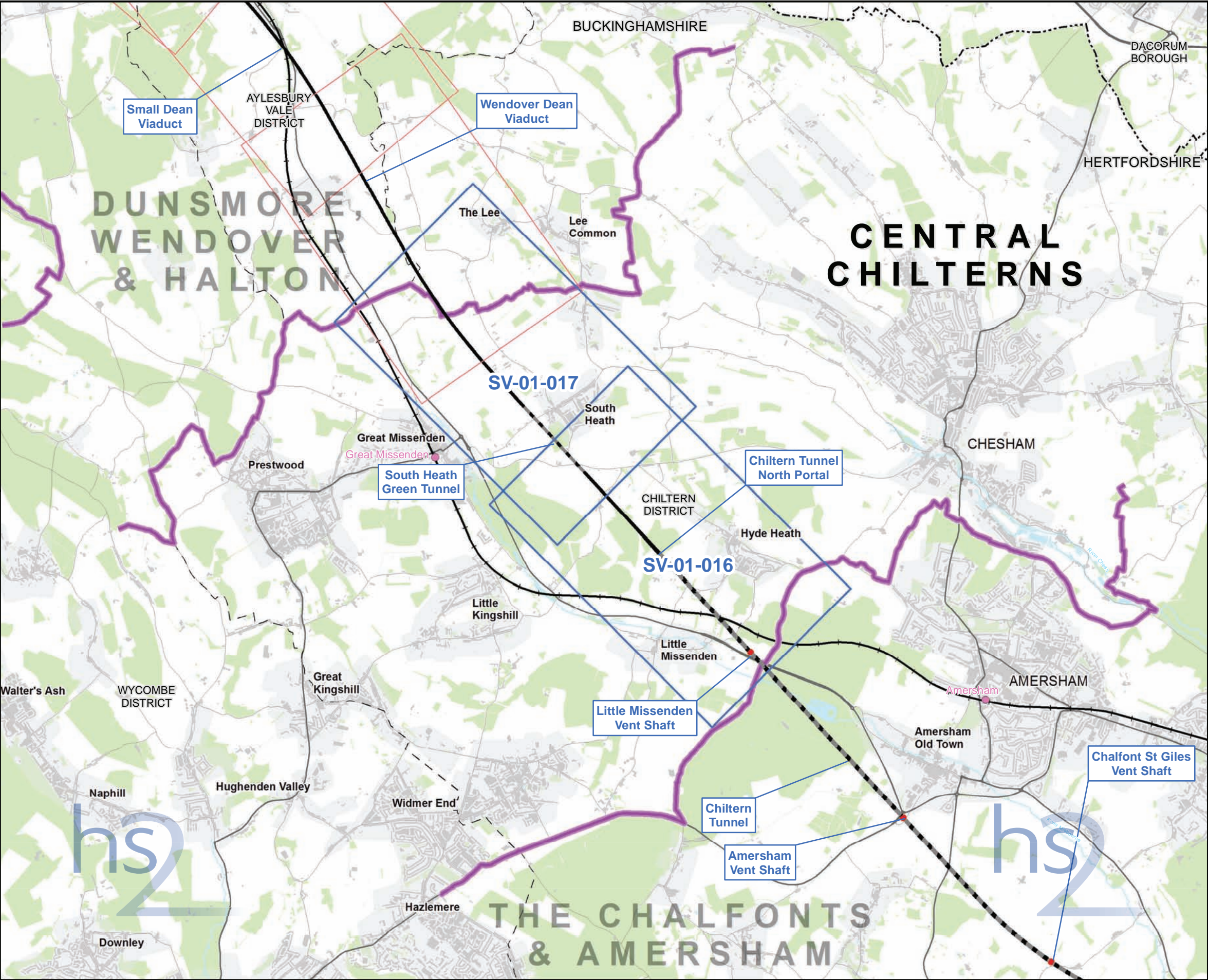
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





**Map Series Information:**

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-01-INDEX-CFA9

Map Name

Index Map of:  
Operational Sound Contour Maps and  
Likely Significant Effects

Community Forum Area CFA9:  
Central Chilterns

hs2

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Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

Scale at A3: 1:50,000

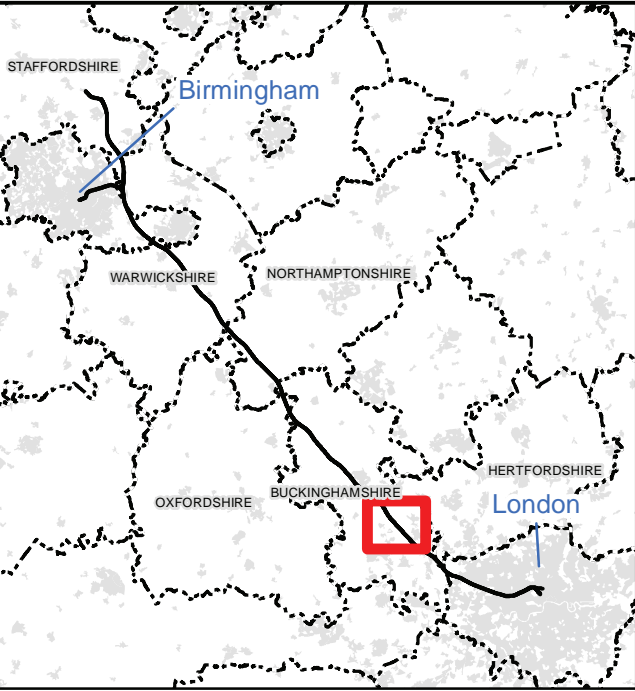
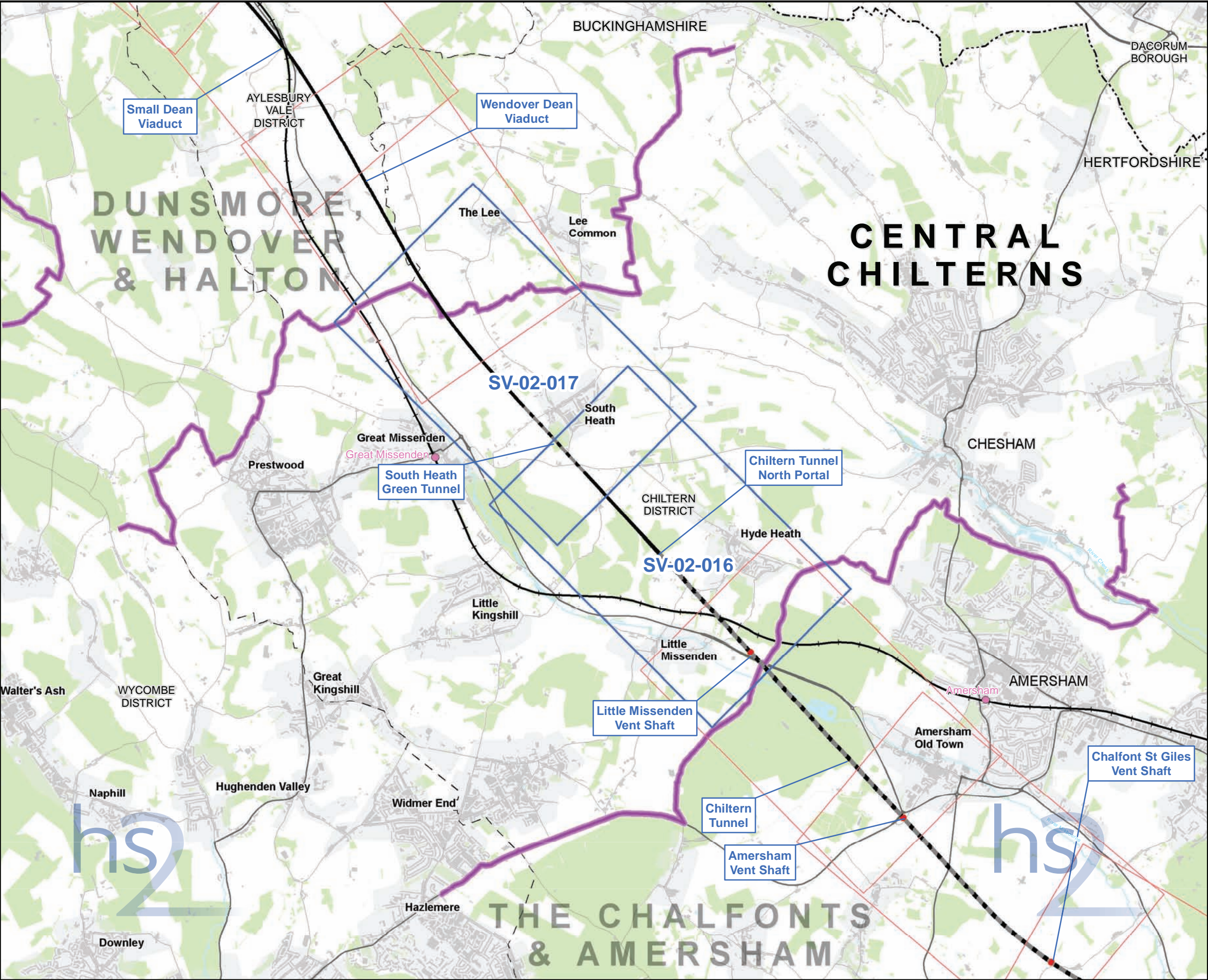
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Doc Number: C250-ARP-EV-MAP-000-004066--P04.00

Date: 29/10/13





**Map Series Information:**

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-02-INDEX-CFA9

Map Name

Index Map of:  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA9:  
Central Chilterns

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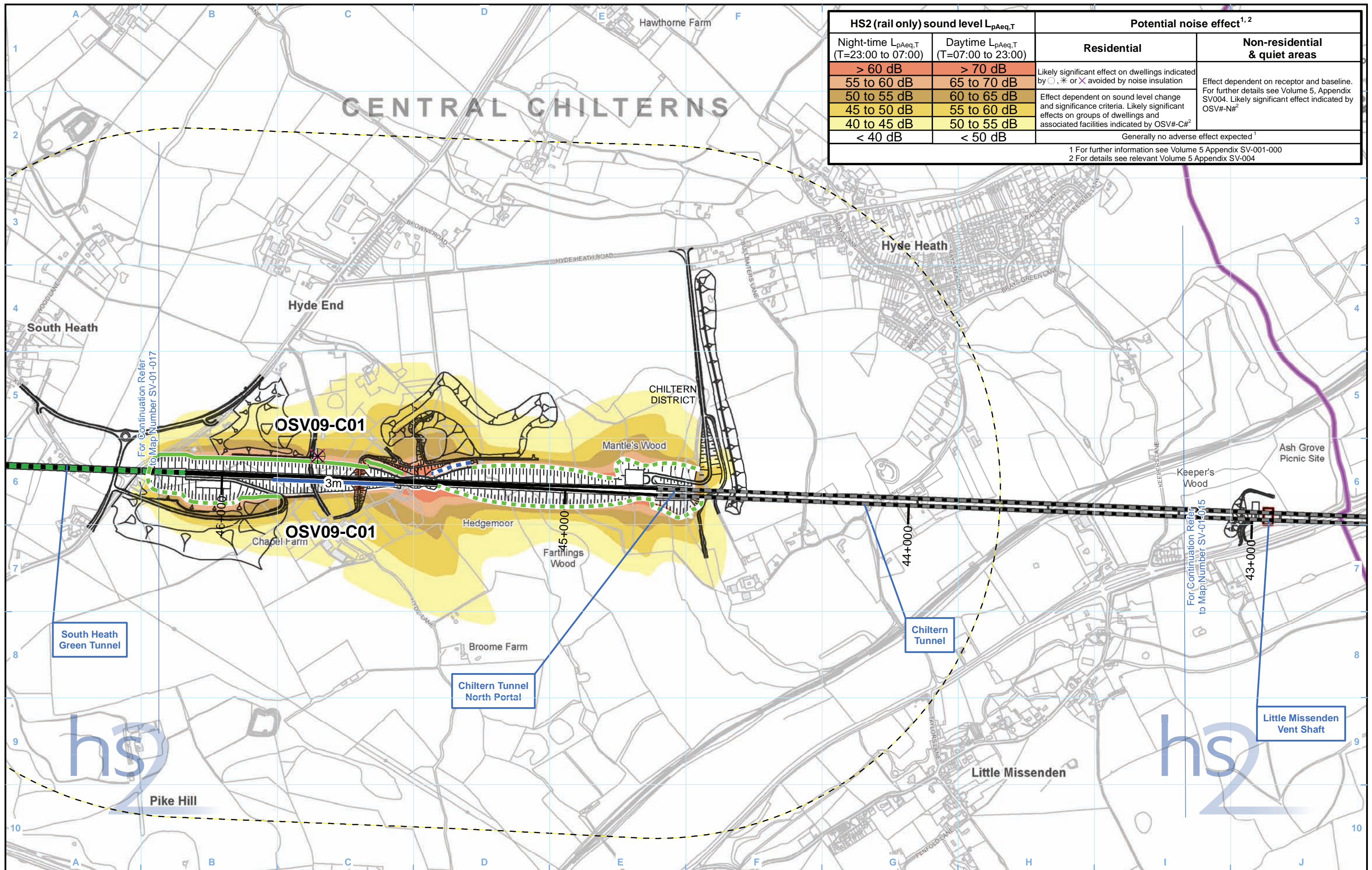
Metres

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Doc Number: C250-ARP-EV-MAP-000-004091--P04.00

Date: 29/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number: SV-01-016

Map Name: Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA09: Central Chilterns

hs2

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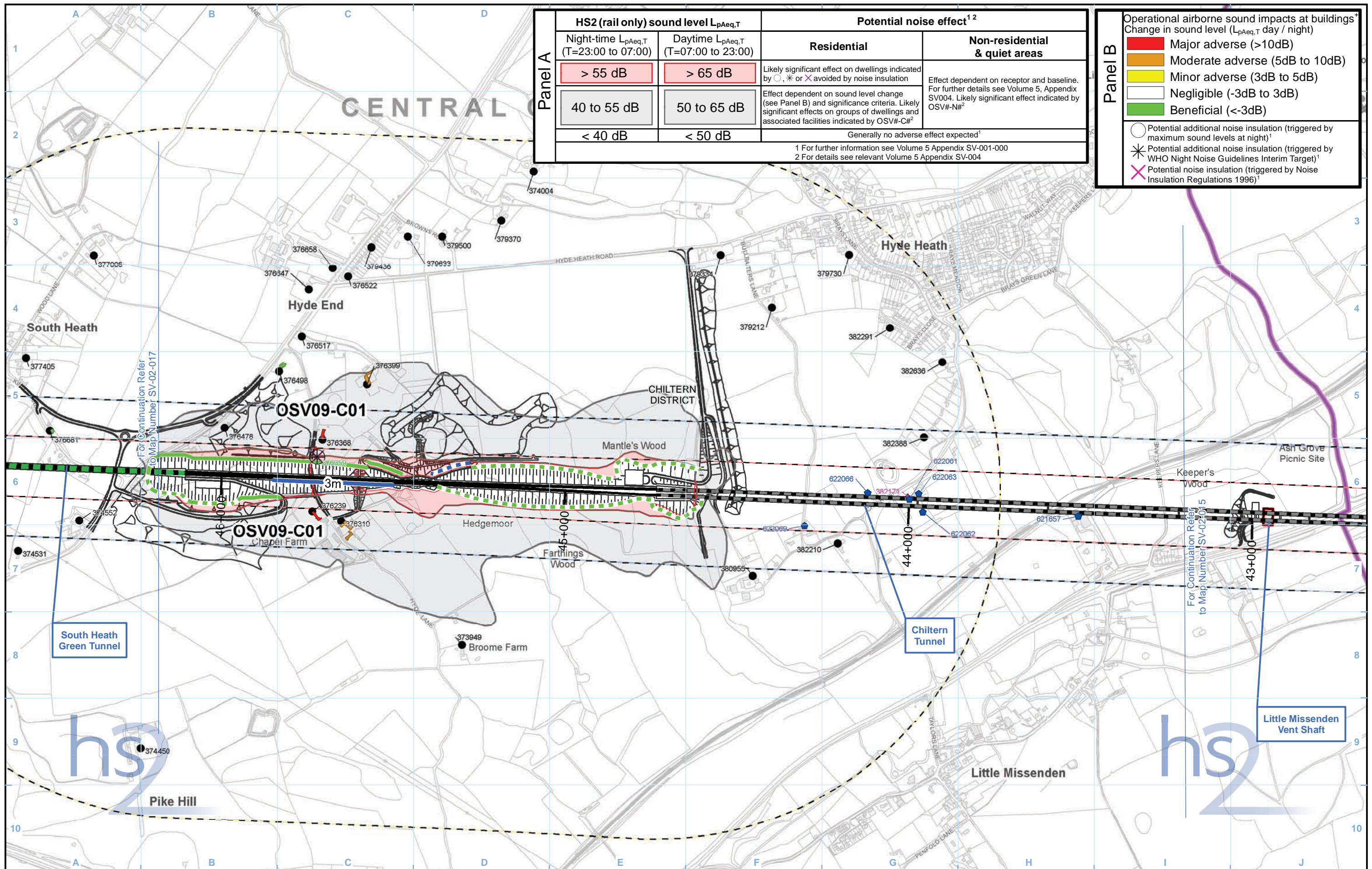
Doc Number: C250-ARP-EV-MAP-000-003558

Date: 29/10/13

Scale at A3: 1:10,000

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Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number: SV-02-016

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA09: Central Chilterns

hs2

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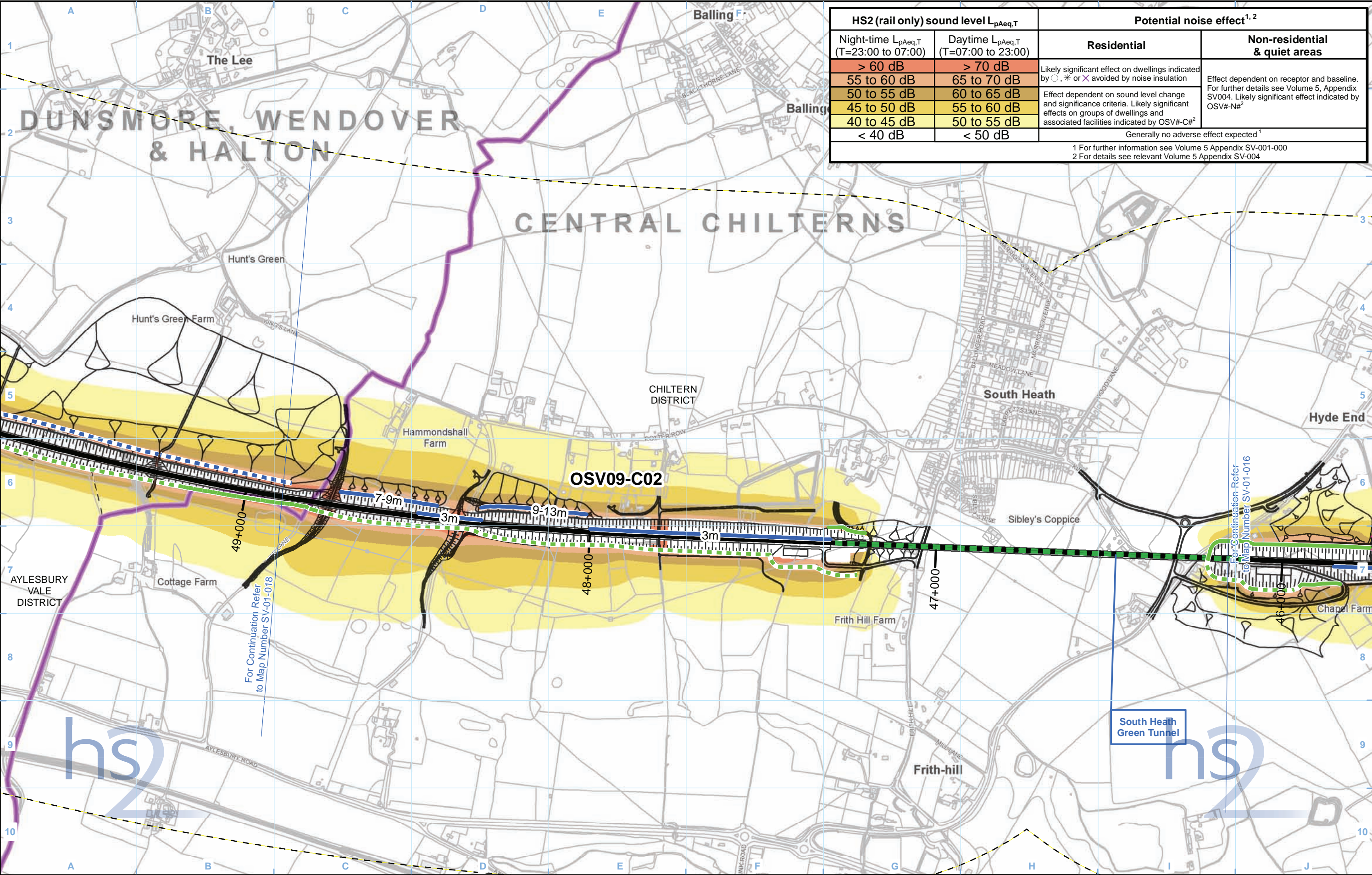
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Doc Number: C250-ARP-EV-MAP-000-003668

Scale at A3: 1:10,000

Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
		Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number  
SV-01-017

Map Name  
Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA09:  
Central Chilterns

hs2

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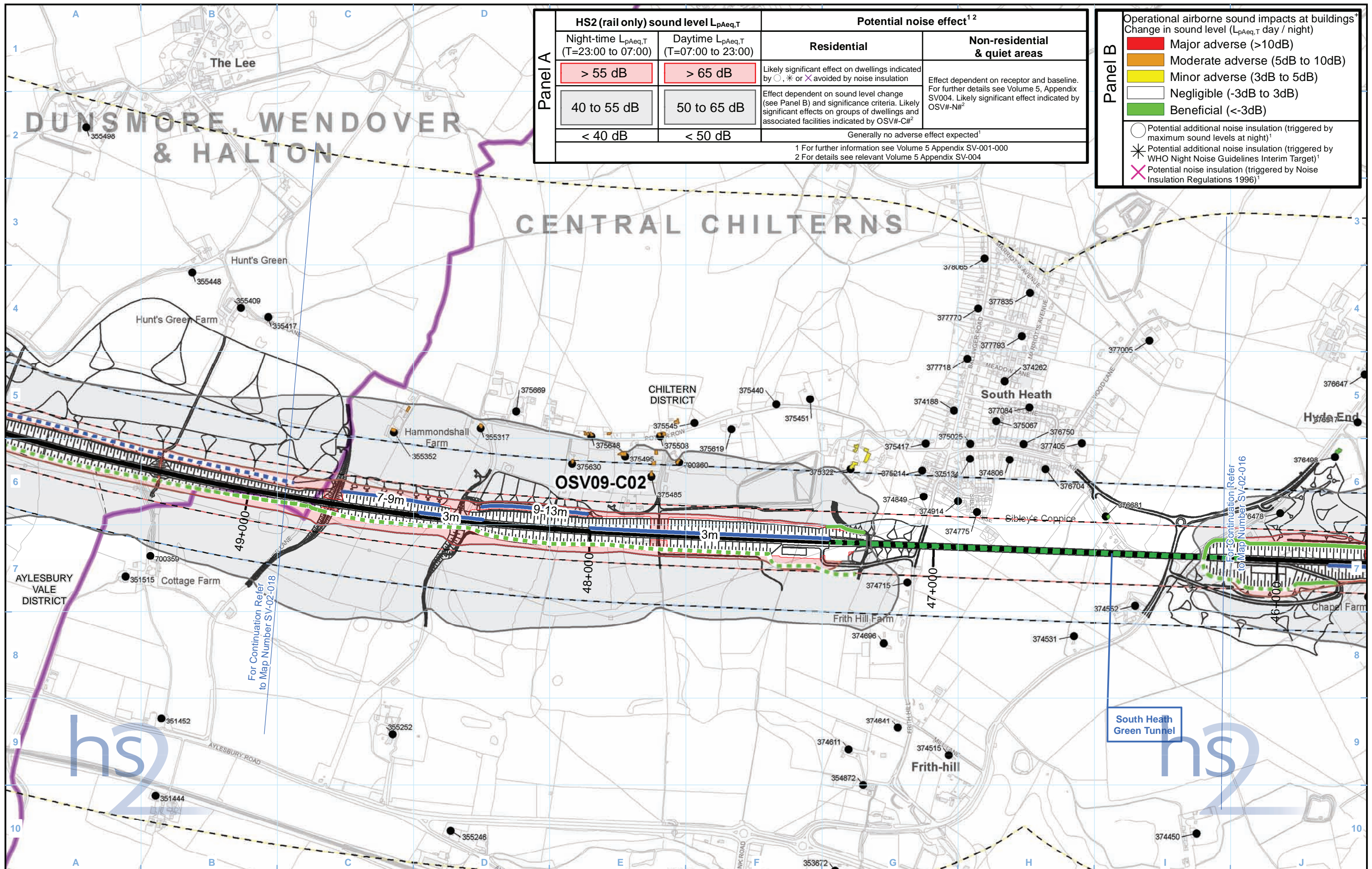
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Doc Number: C250-ARP-EV-MAP-000-003559

Date: 29/10/13





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level (L <sub>pAeq,T</sub> day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-017

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA09:

Central Chilterns

hs2

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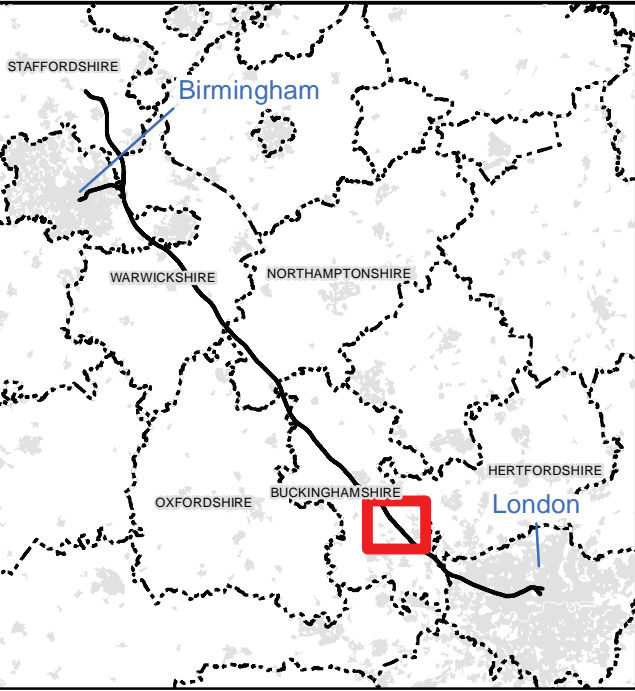
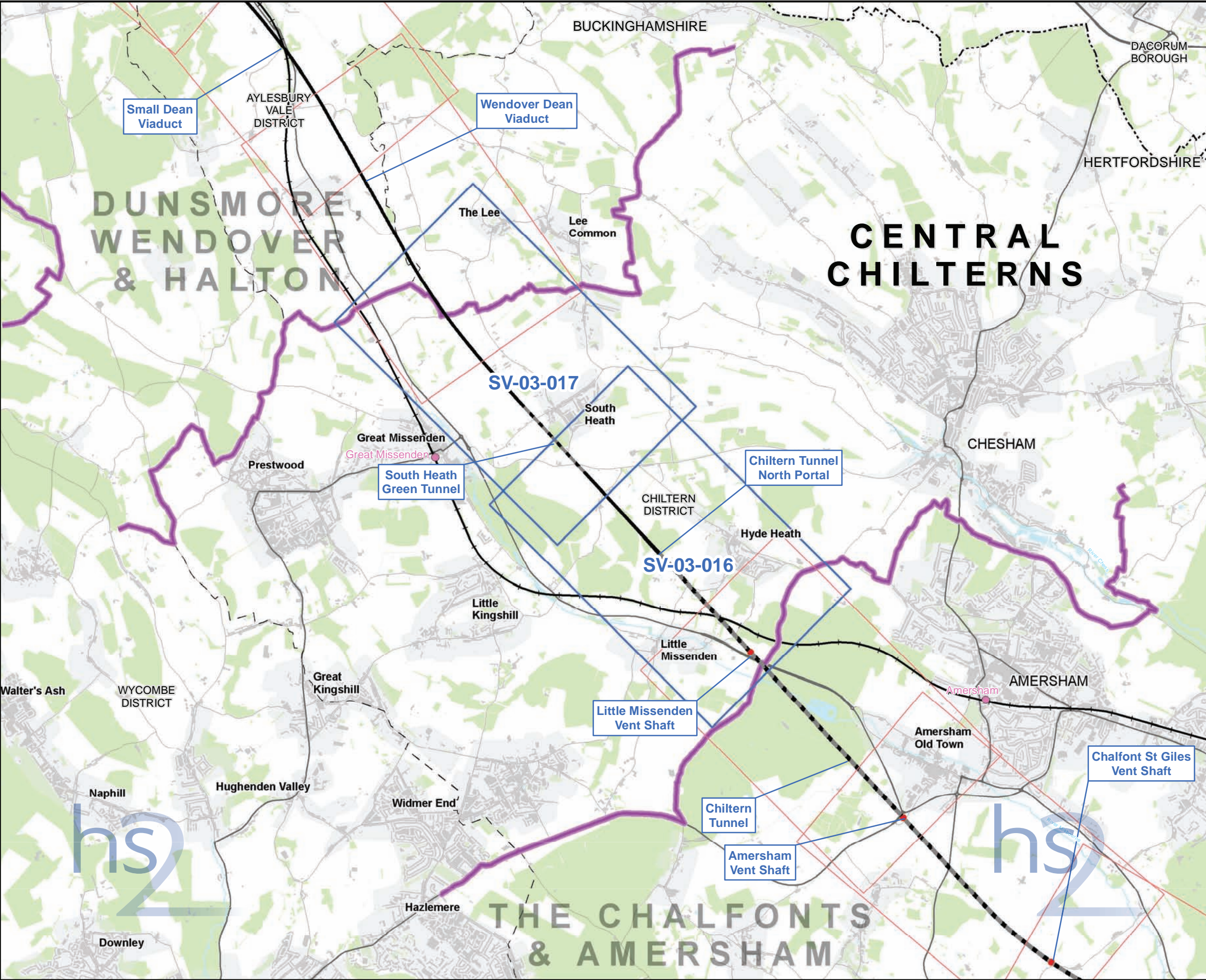
Doc Number: C250-ARP-EV-MAP-000-003669

Scale at A3: 1:10,000

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Date: 31/10/13





**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA9

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA9:  
Central Chilterns

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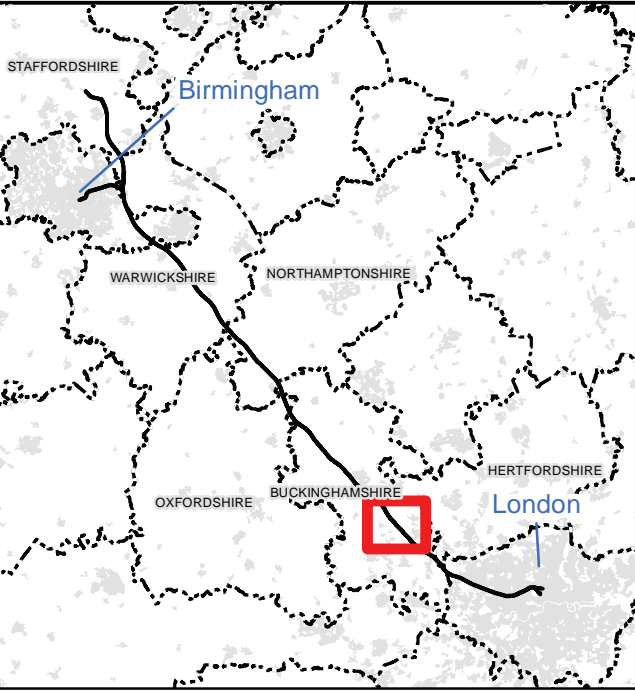
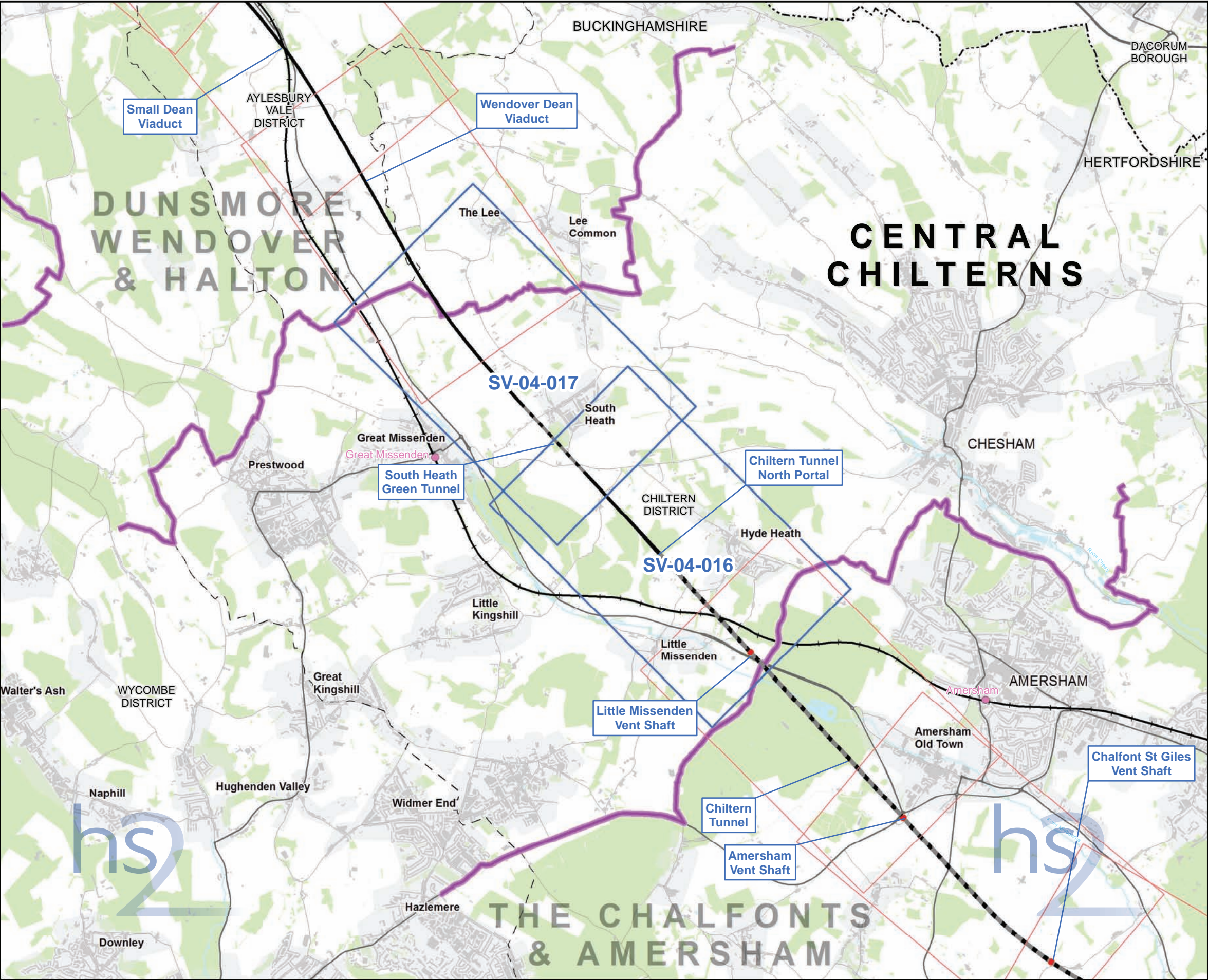
Metres

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Doc Number: C250-ARP-EV-MAP-000-004117-P06.00

Date: 29/10/13





**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA9

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA9:  
Central Chilterns

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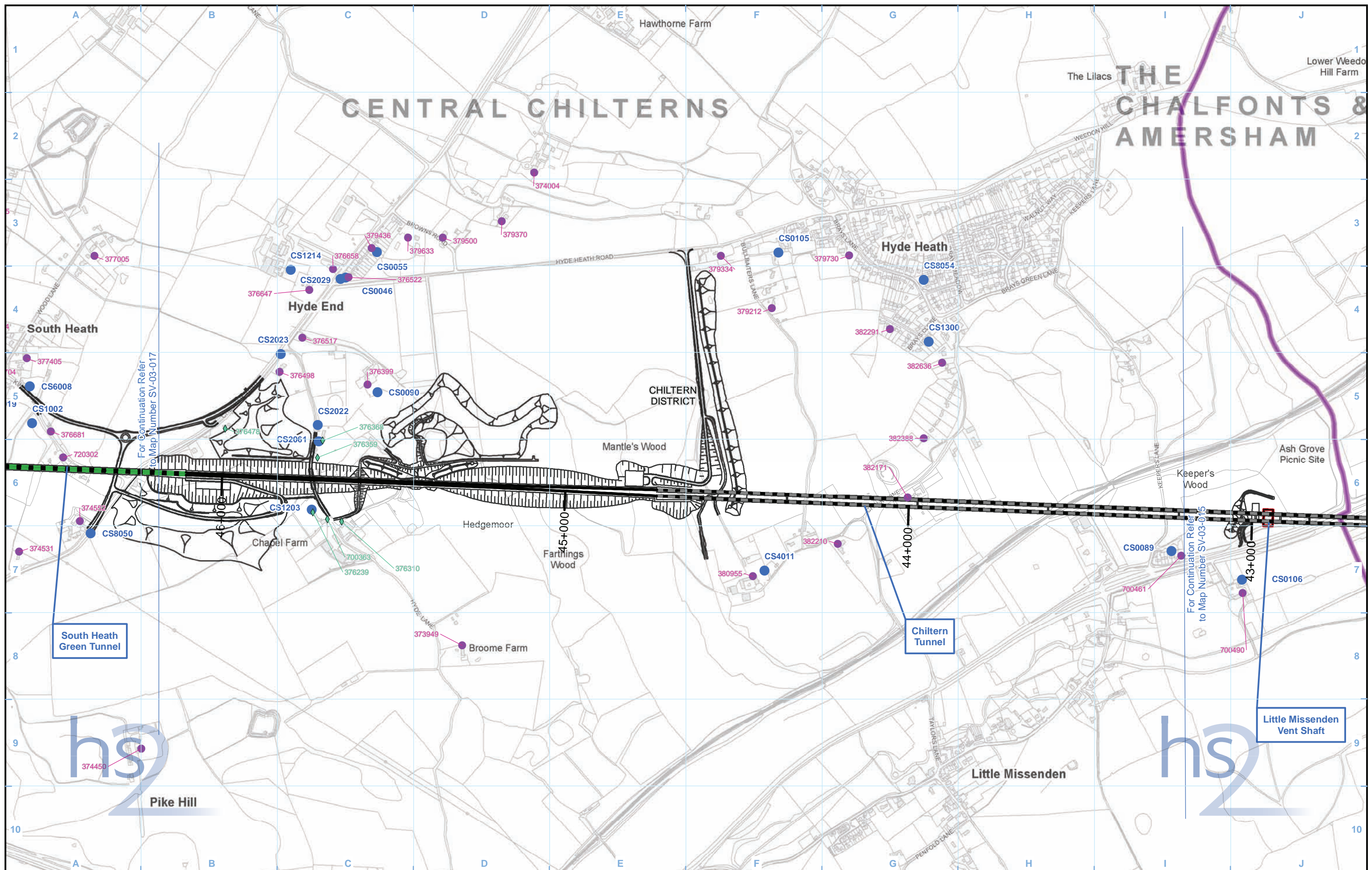
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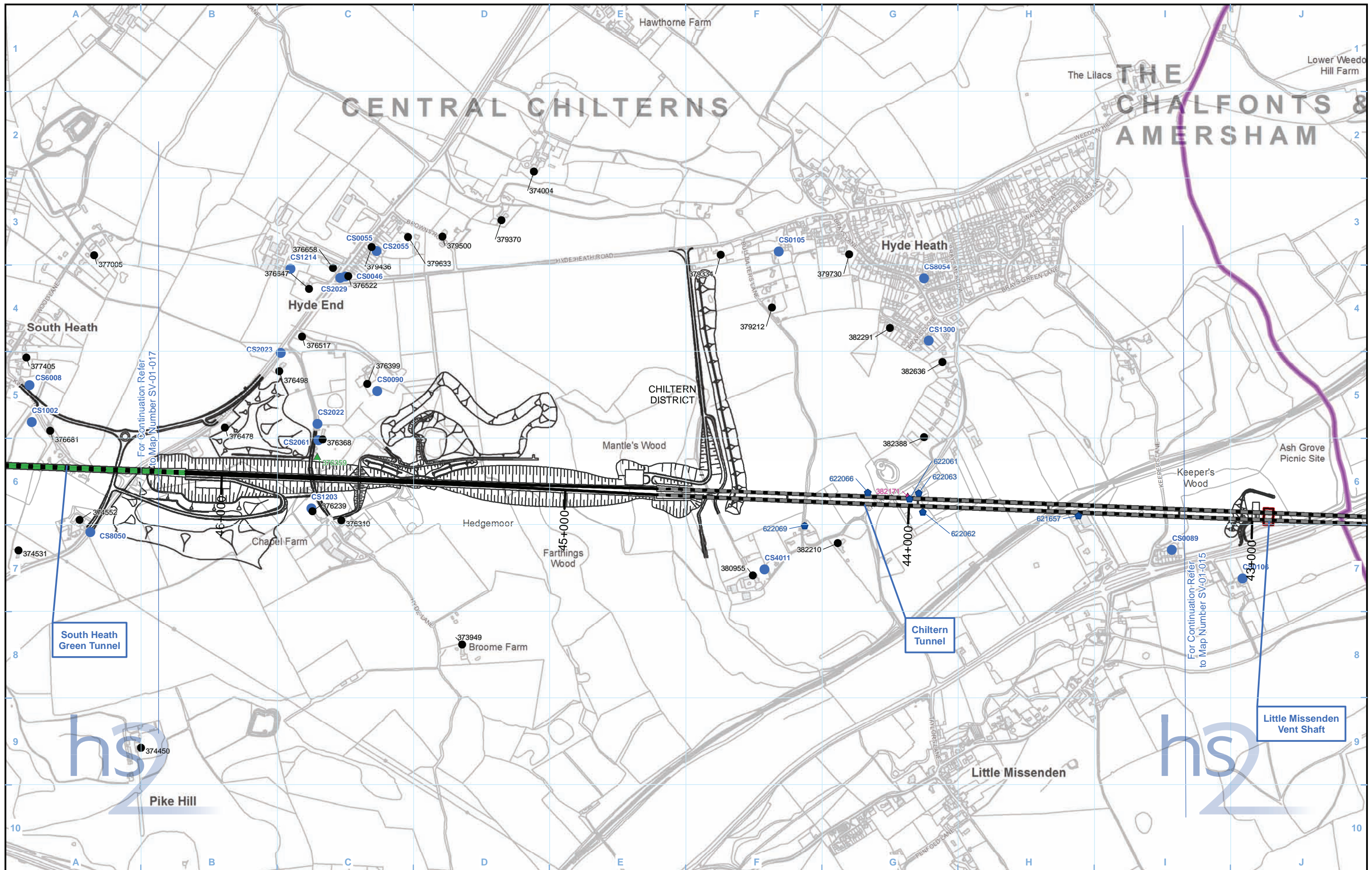
Date: 29/10/13





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-03-016</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Doc Number: C250-ARP-EV-MAP-000-003769</p> <p>Date: 29/10/13</p>
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>			Map Name <b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>	
					Community Forum Area CFA09: Central Chilterns	





Legend - General features			Legend - Sound related features		
	Route in bored tunnel				
	Route in green tunnel				
	Route on surface				
	Depot, station, headhouse or portal building				
	Community forum boundary				
	District/Borough boundary				
	County boundary				

Legend - Earthworks	
	Embankment
	Cutting

Legend - Earthworks	
	Embankment
	Cutting

Map Information	
Map Number	SV-04-016
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA09: Central Chilterns	

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Doc Number: C250-ARP-EV-MAP-000-003870	Date: 29/10/13

Scale at A3: 1:10,000











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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA10 | Dunsmore, Wendover and Halton

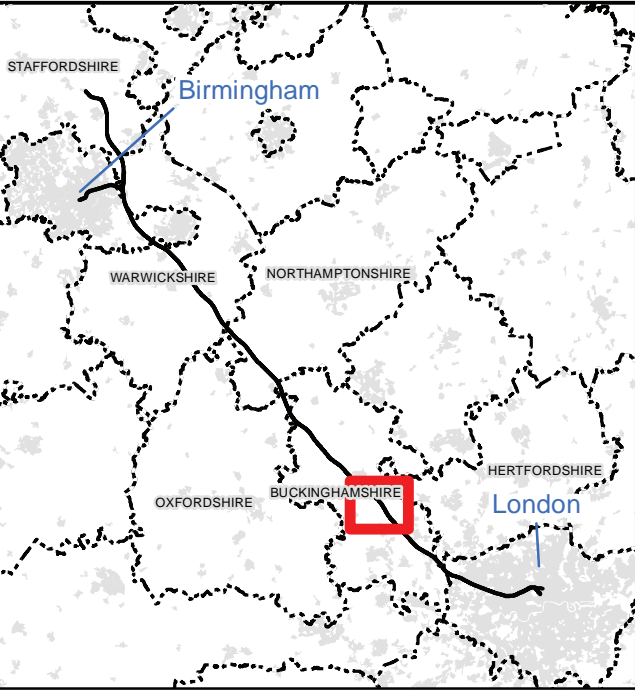
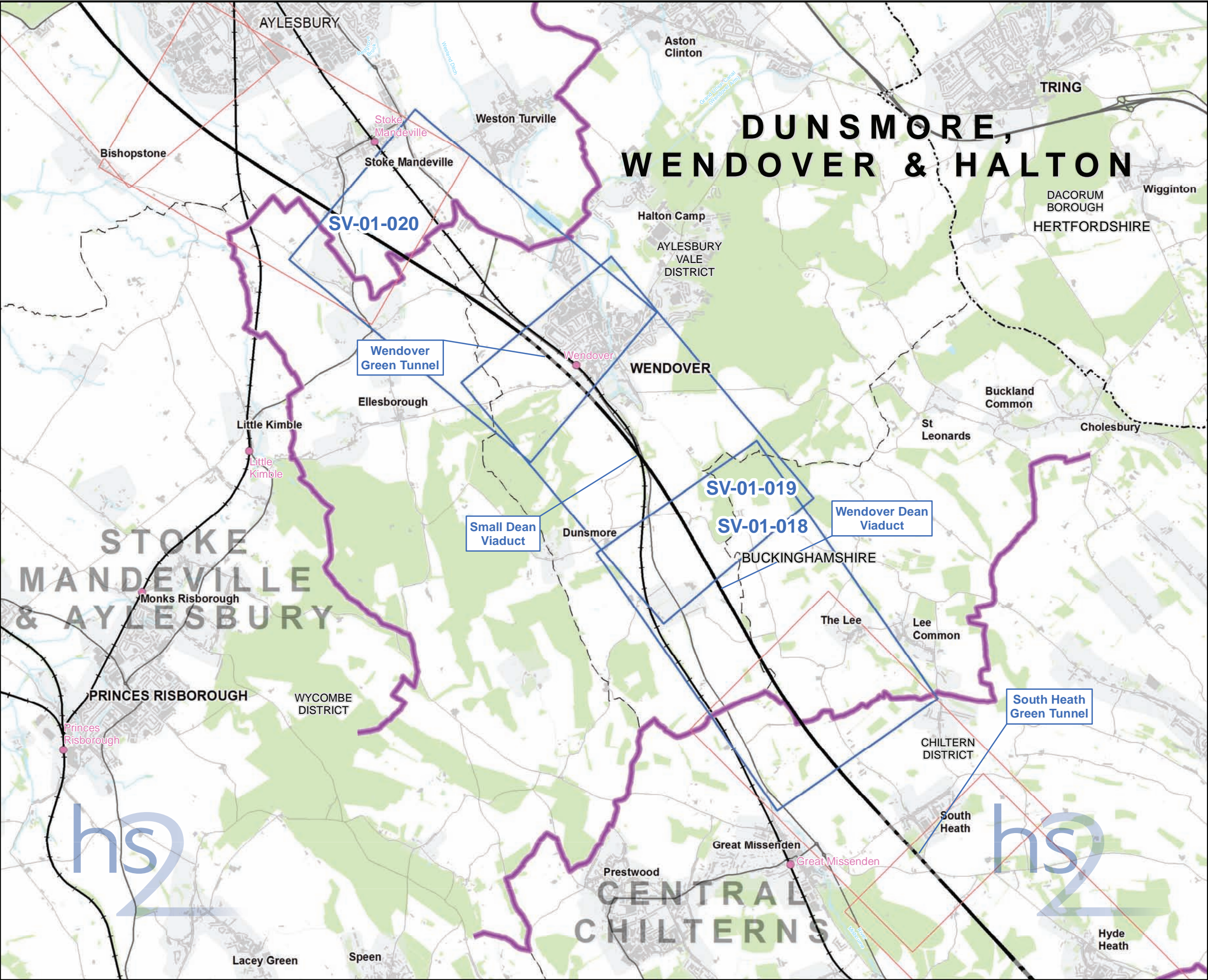
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





## Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):


- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.


Note: Not all data layers in the legend are represented on every map.

- Main Map Legend**
- Route in tunnel
  - Route on surface
  - Depot, station, headhouse or portal building
  - Community forum boundary
  - Existing railway station
  - County boundary
  - District/Borough boundary
  - Map sheets included in this community forum
  - Map sheets not included in this community forum

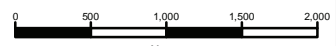
Map Number	SV-01-INDEX-CFA10
Map Name	Index Map of: Operational Sound Contour Maps and Likely Significant Effects
	Community Forum Area CFA10: Dunsmore, Wendover & Halton



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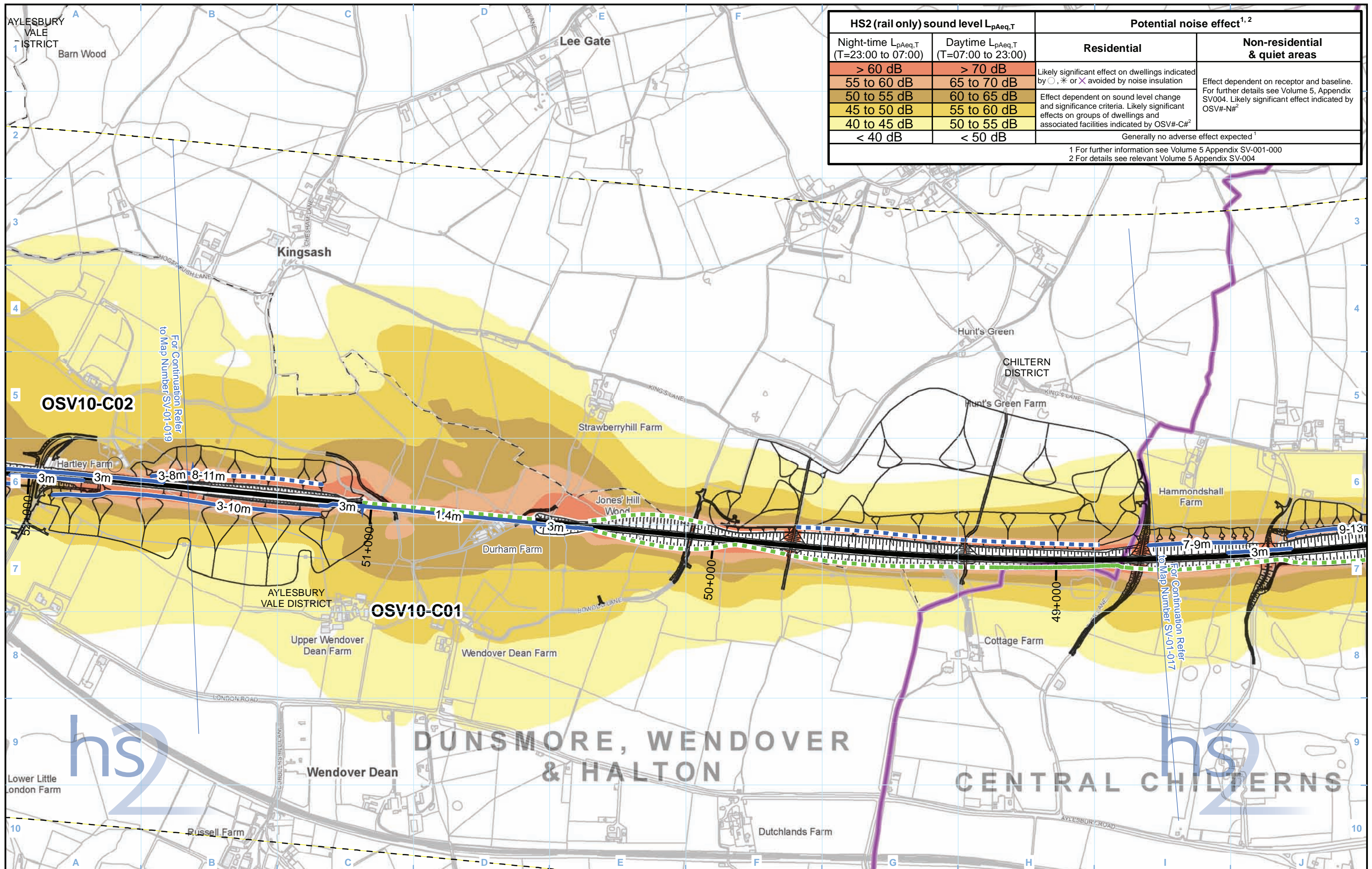
Doc Number: C250-ARP-EV-MAP-000-004067--P04.00

Date: 29/10/13









HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

**Legend - Sound related features**

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number: SV-01-018

Map Name: Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA10: Dunsmore, Wendover & Halton

hs2

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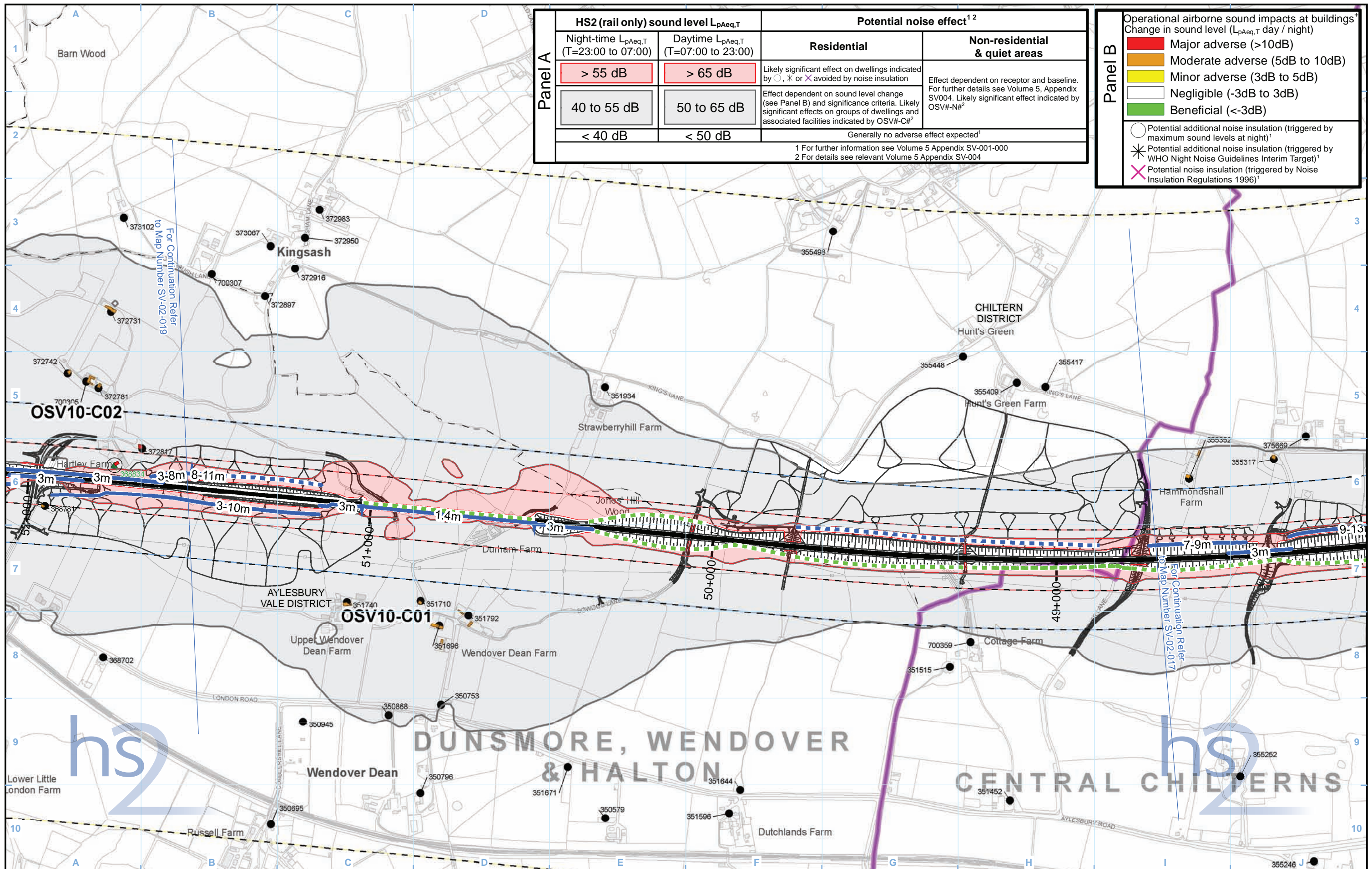
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Doc Number: C250-ARP-EV-MAP-000-003560

Date: 29/10/13

Scale at A3: 1:10,000





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
  - Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number: SV-02-018

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA10: Dunsmore, Wendover & Halton

hs2

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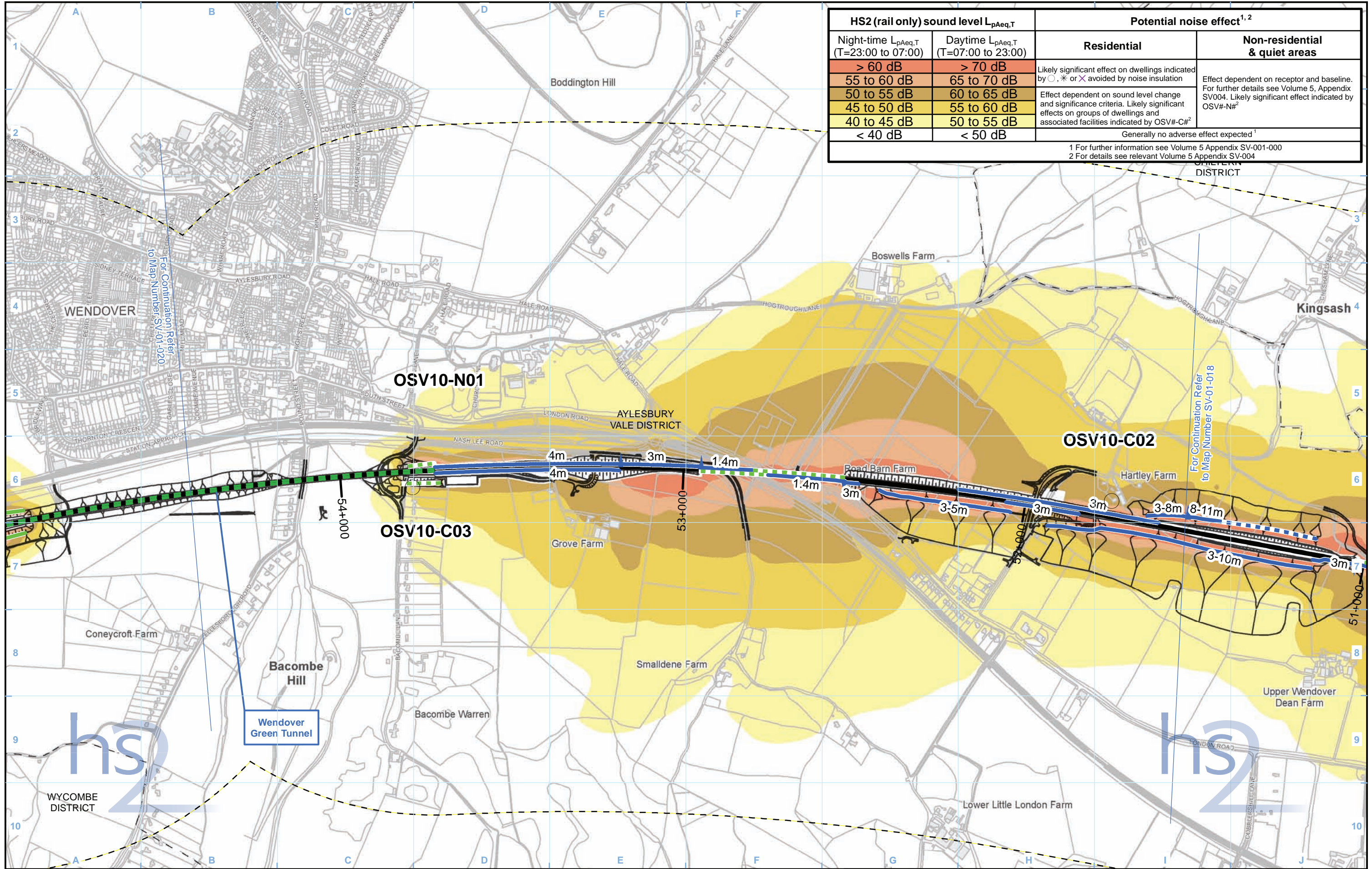
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Doc Number: C250-ARP-EV-MAP-000-003670

Scale at A3: 1:10,000

Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

- Legend - General features
- Route in bored tunnel
  - Route in green tunnel
  - Route on surface
  - Depot, station, headhouse or portal building
  - Community forum boundary
  - District/Borough boundary
  - County boundary

- Engineering earthworks:
- Embankment
  - Cutting
- Non engineering earthworks:
- Embankment
  - Cutting

- Legend - Sound related features
- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
  - Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
  - Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
  - Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>
- \* Labelled with total barrier height above rail level

Map Number: SV-01-019

Map Name: Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA10: Dunsmore, Wendover & Halton

hs2

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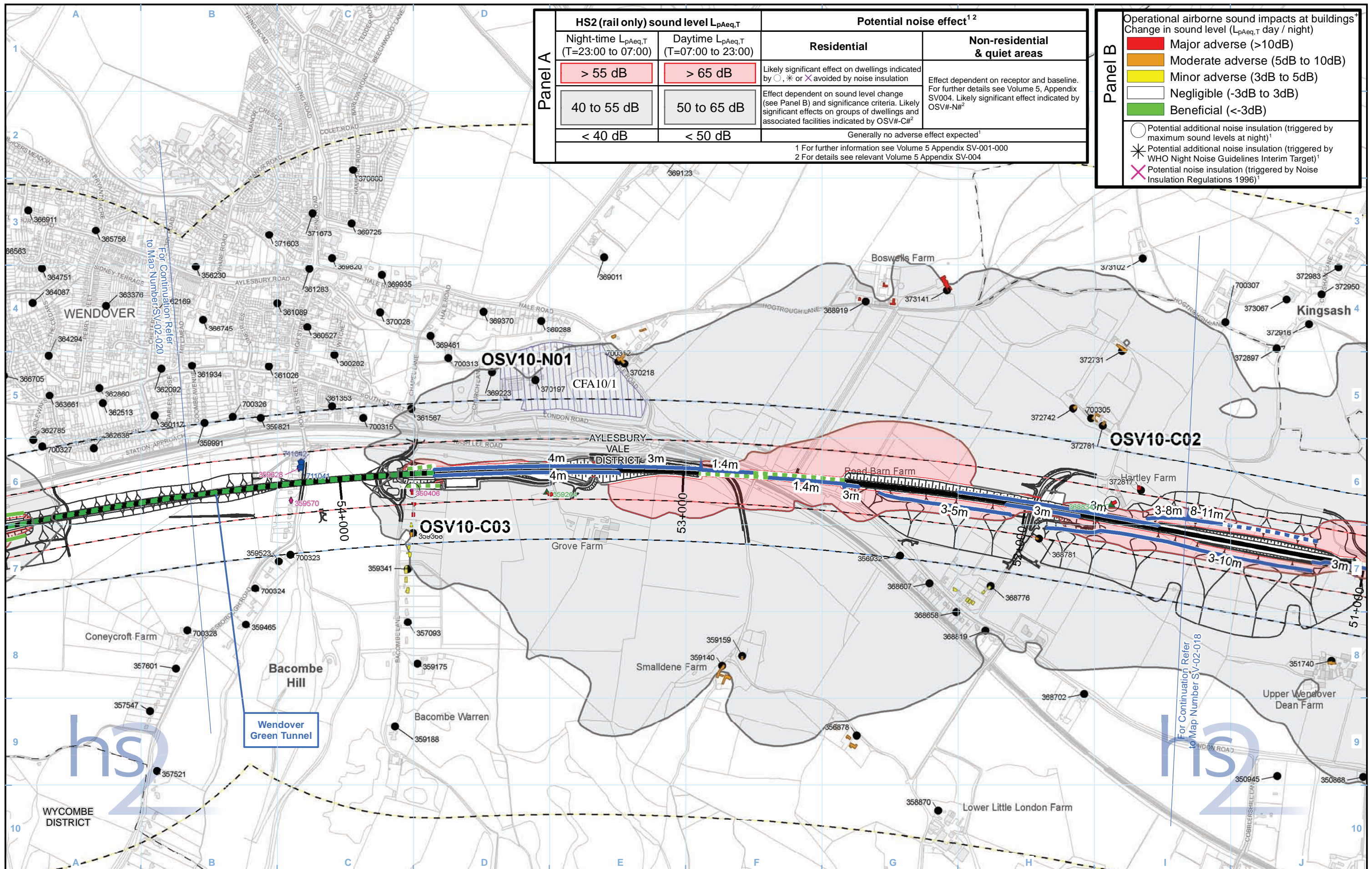
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Doc Number: C250-ARP-EV-MAP-000-003561

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-019

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA10: Dunsmore, Wendover & Halton

hs2

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Scale at A3: 1:10,000

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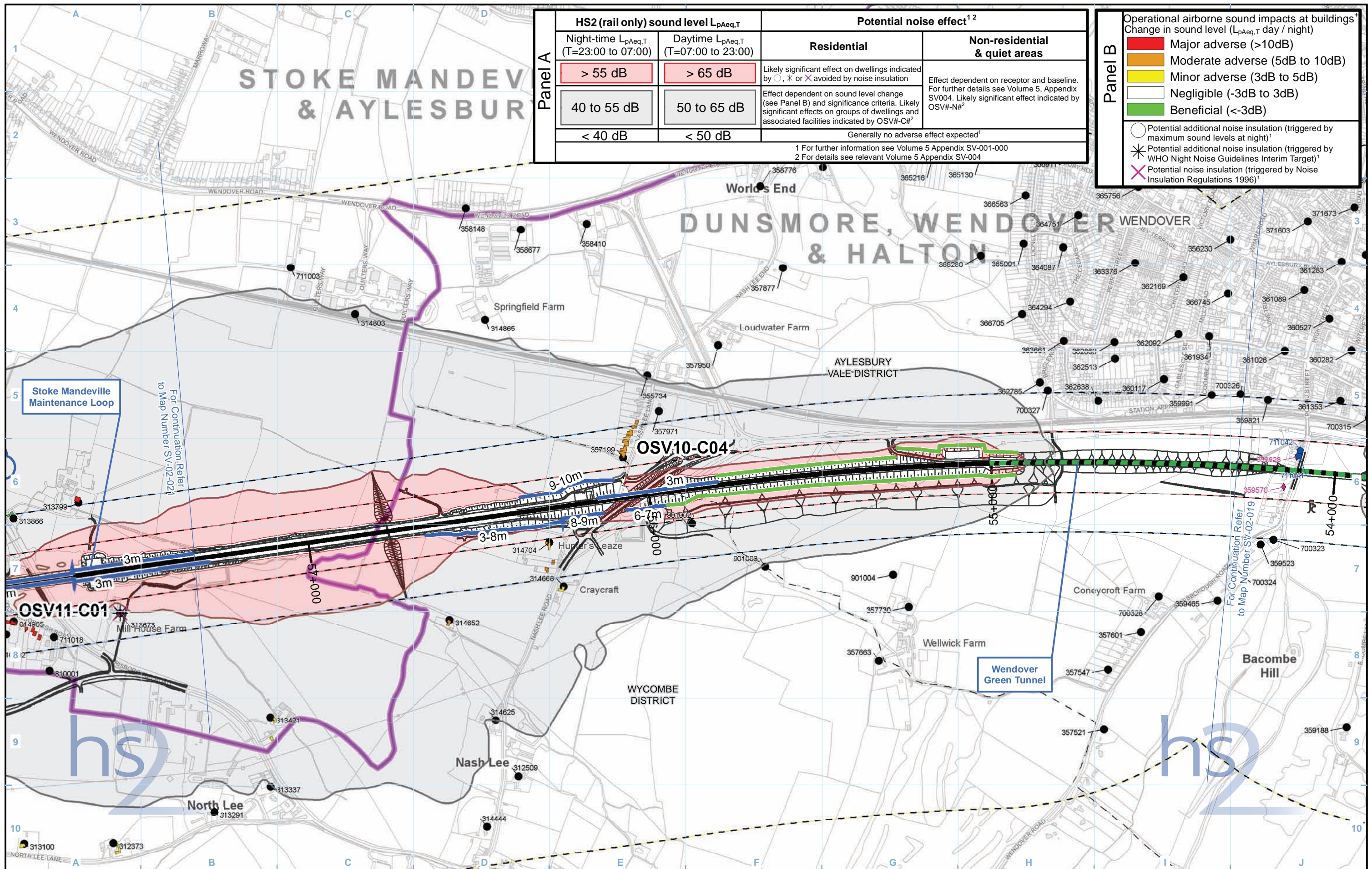
Doc Number: C250-ARP-EV-MAP-000-003671

Date: 31/10/13









Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level (L <sub>pAeq,T</sub> day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number: SV-02-020

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA10: Dunsmore, Wendover & Halton

hs2

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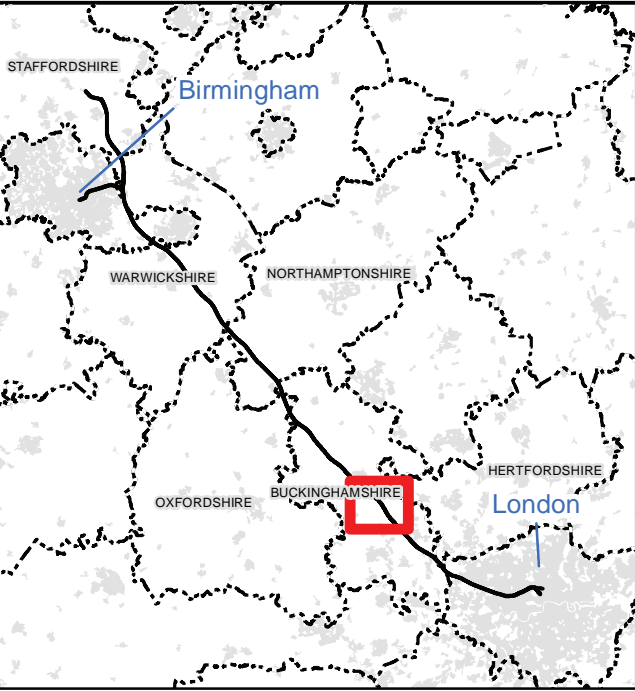
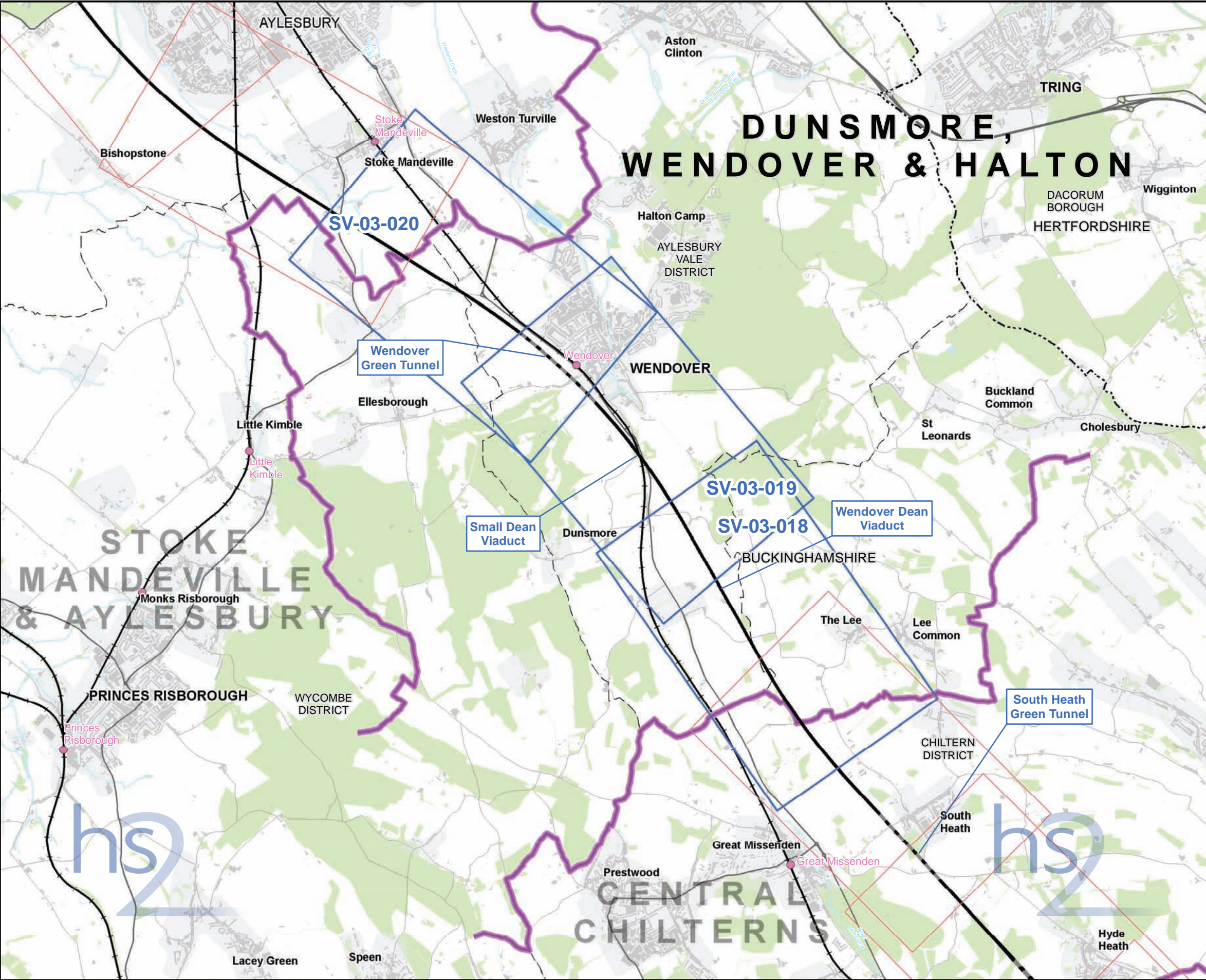
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Date: 31/10/13





**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA10

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA10:  
Dunsmore, Wendover & Halton

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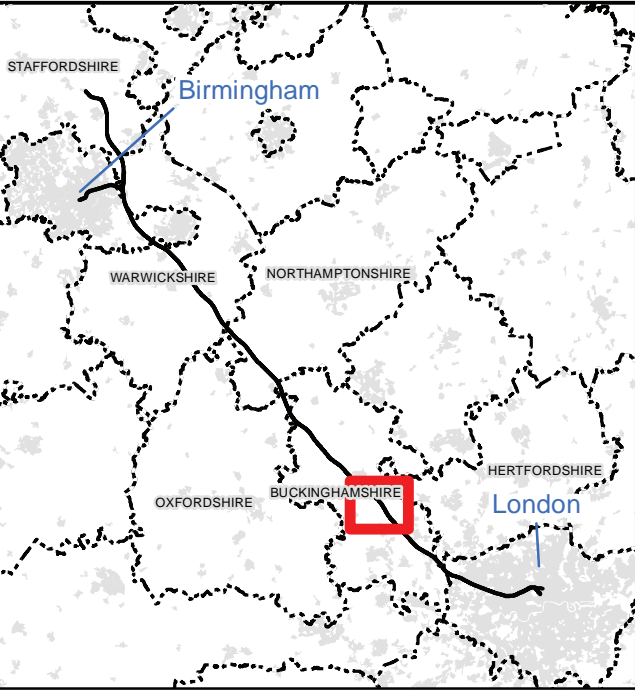
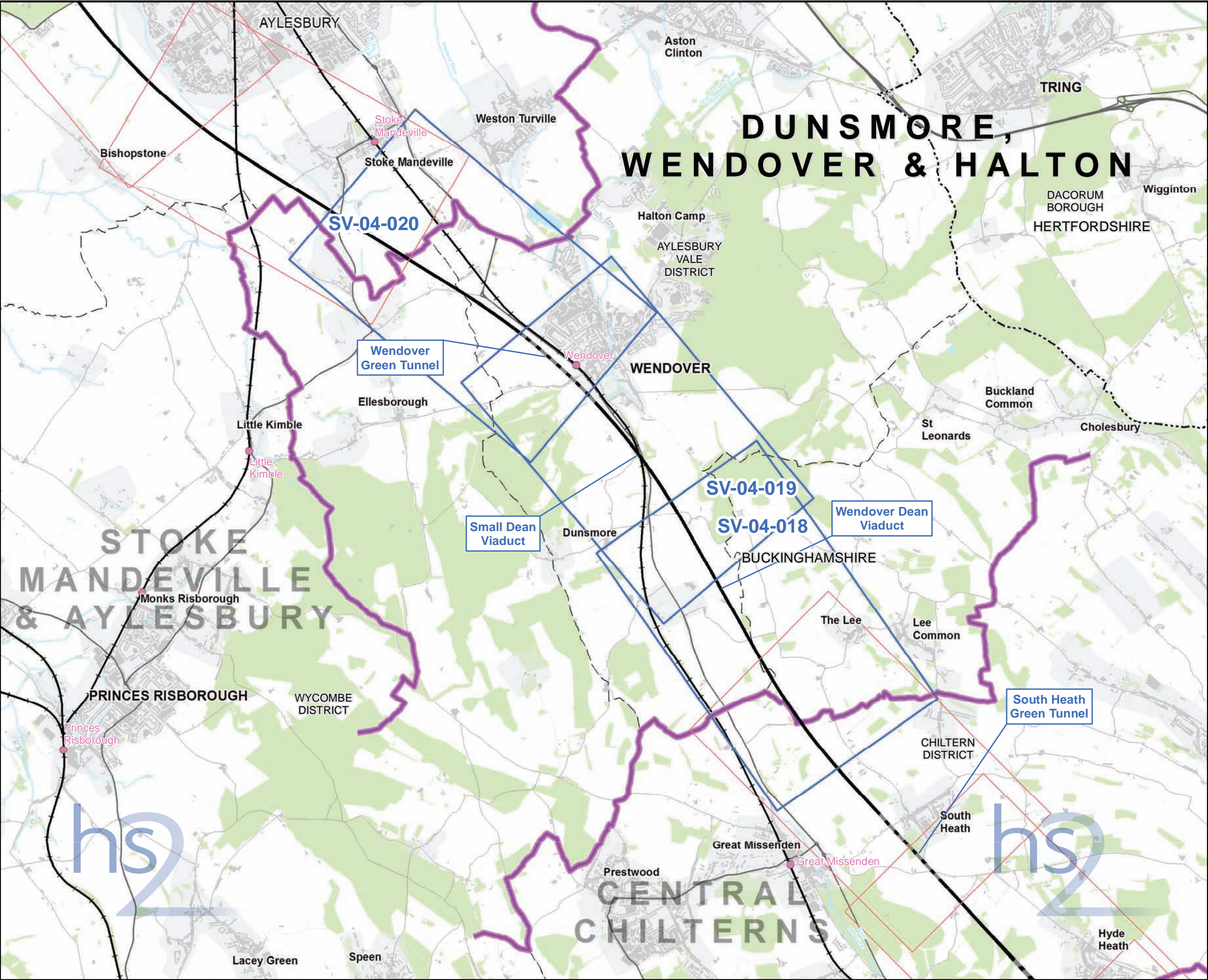
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Scale at A3: 1:50,000

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Metres

**Date: 29/10/13**





**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number SV-04-INDEX-CFA10

Map Name Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA10:  
Dunsmore, Wendover & Halton



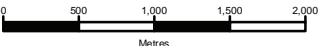
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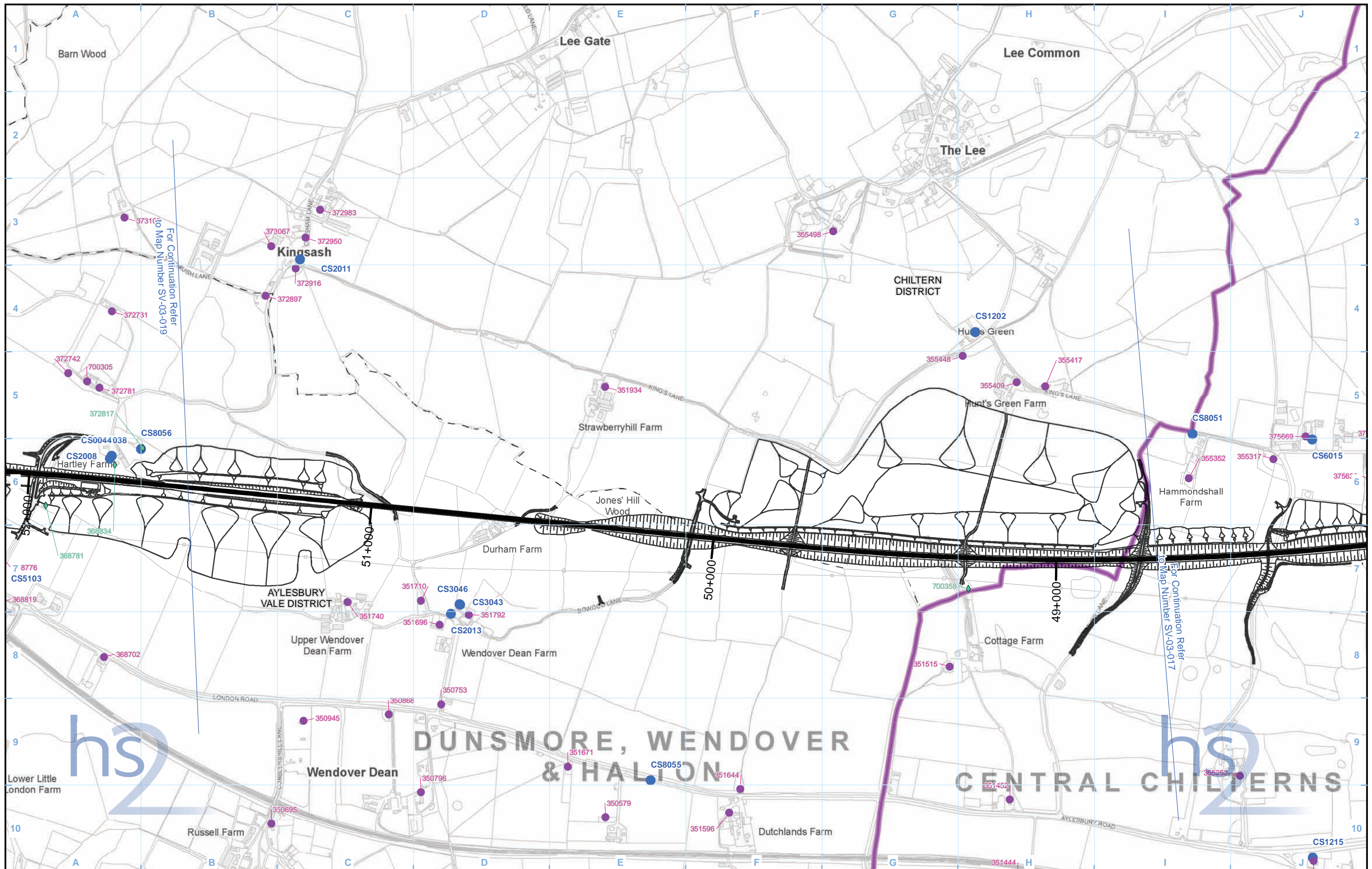
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Doc Number: C250-ARP-EV-MAP-000-004144--P04.00

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-018
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA10: Dunsmore, Wendover & Halton	




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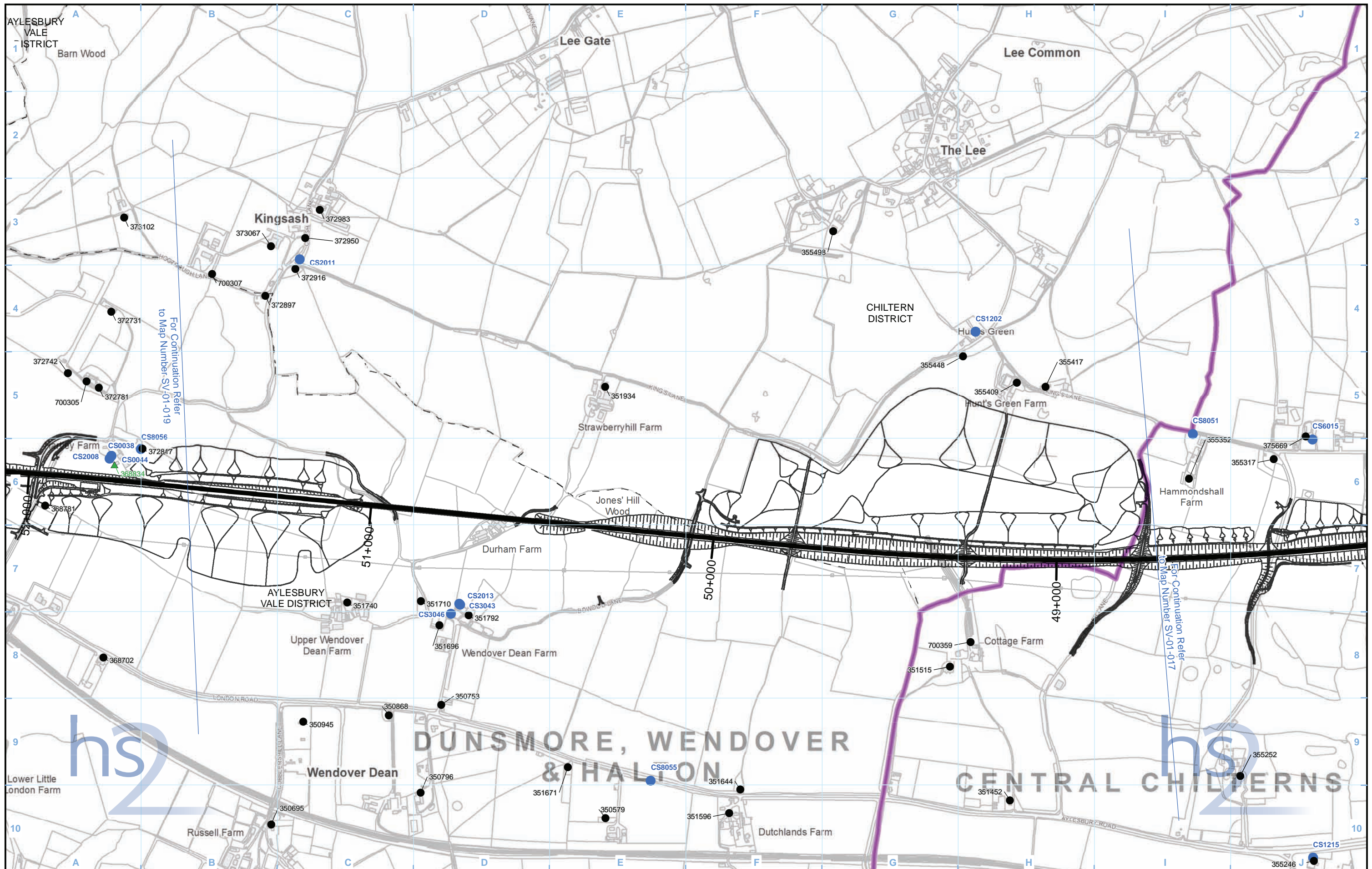
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0 100 200 300 400 Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-018
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA10: Dunsmore, Wendover & Halton	




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Metres

Date: 29/10/13





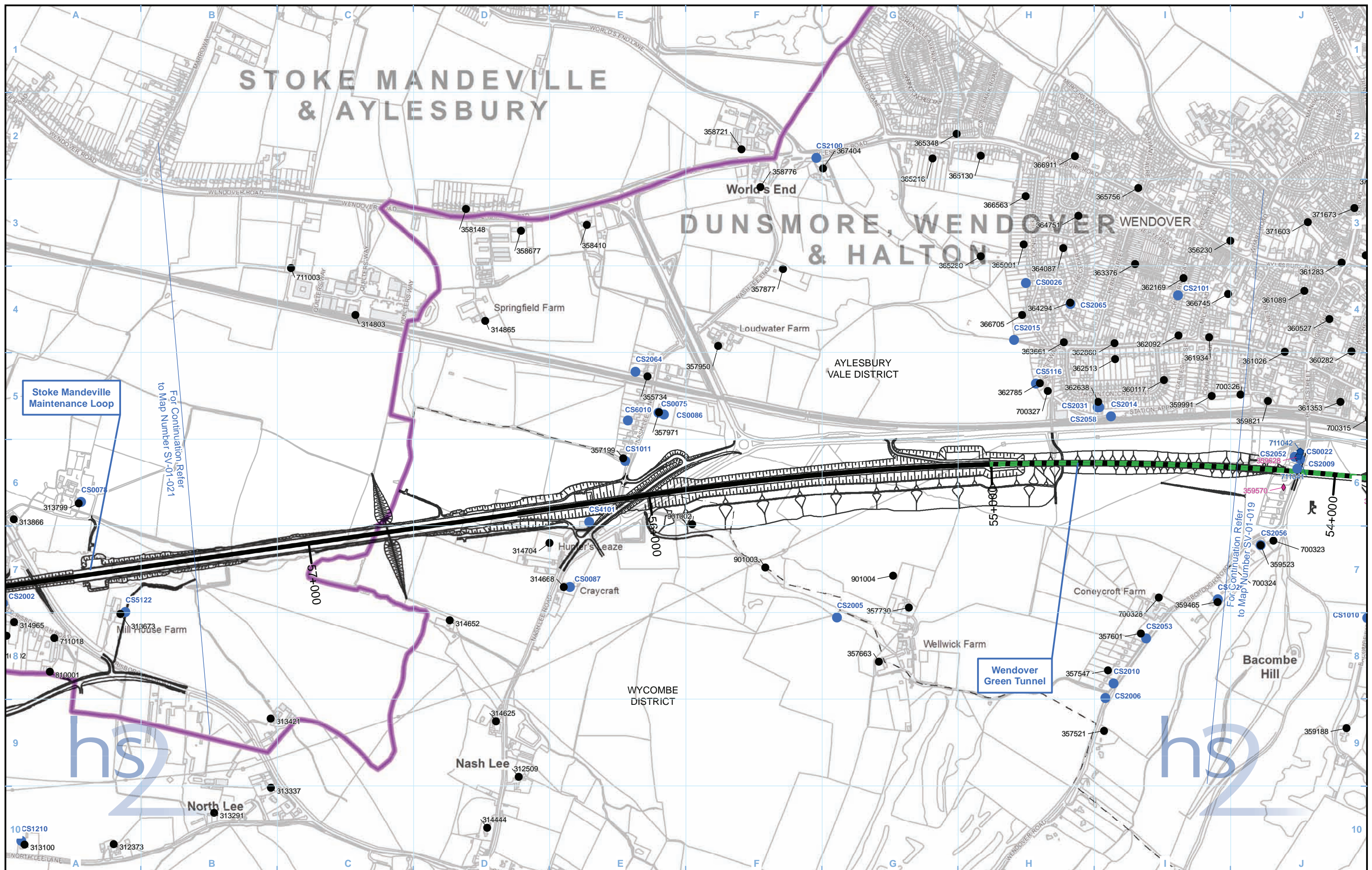












Legend - General features			Legend - Sound related features		
	Route in bored tunnel				
	Route in green tunnel				
	Route on surface				
	Depot, station, headhouse or portal building				
	Community forum boundary				
	District/Borough boundary				
	County boundary				

Legend - Sound related features	
	Engineering earthworks: Embankment
	Engineering earthworks: Cutting
	Non engineering earthworks: Embankment
	Non engineering earthworks: Cutting

Map Number	SV-04-020
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA10: Dunsmore, Wendover & Halton	

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Doc Number: C250-ARP-EV-MAP-000-003874

Date: 29/10/13

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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA11 | Stoke Mandeville and Aylesbury

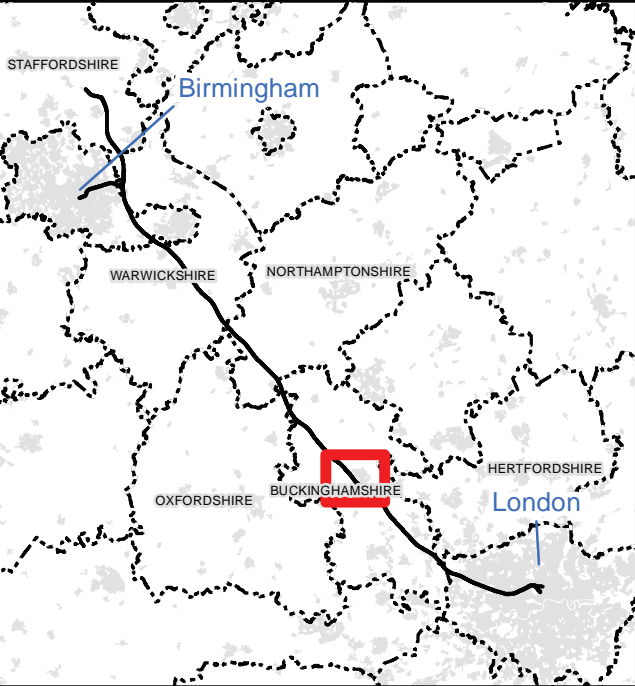
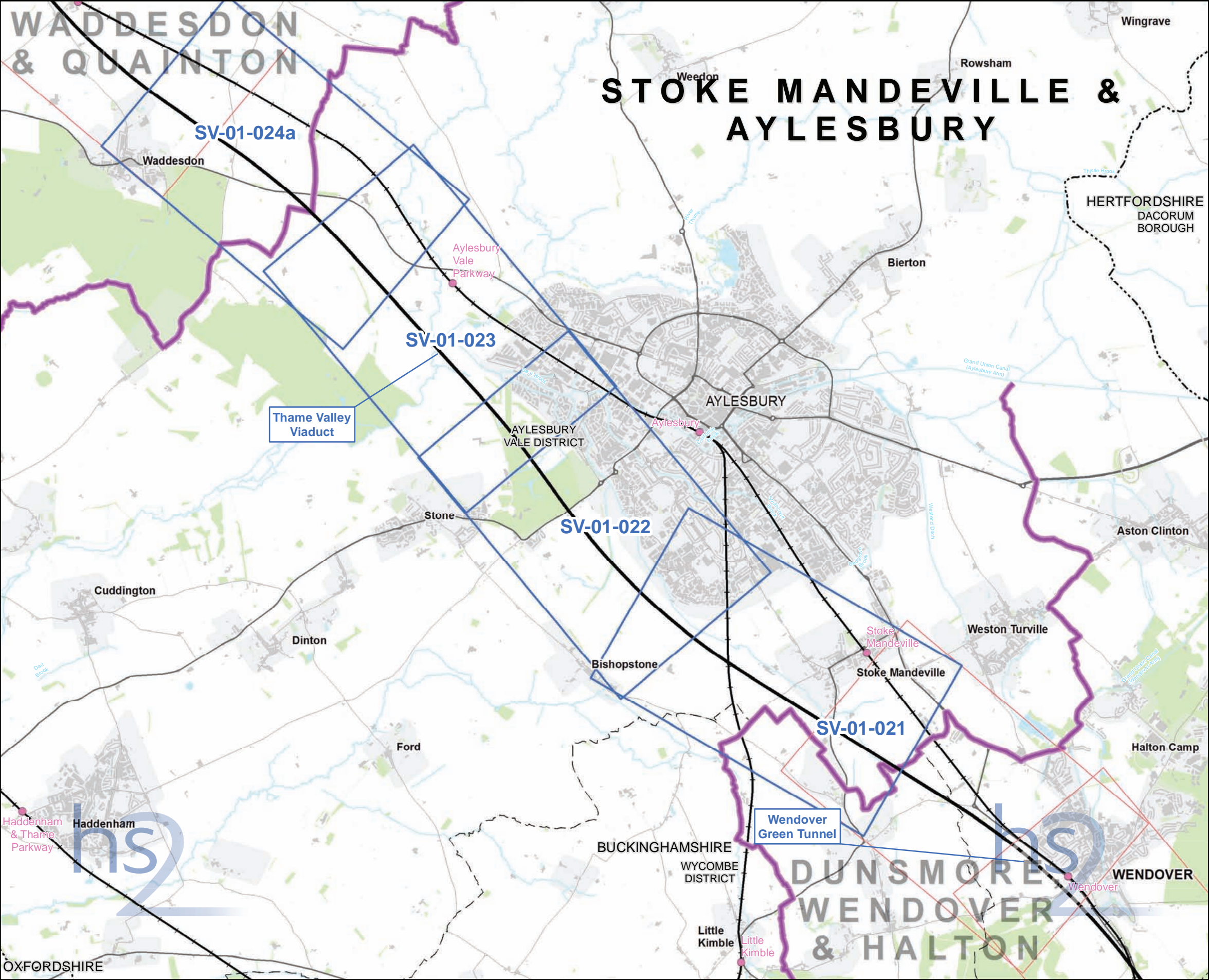
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





### Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

hs2

Wendover Green Tunnel

Map Number

SV-01-INDEX-CFA11

Map Name

Index Map of:  
Operational Sound Contour Maps and  
Likely Significant Effects

Community Forum Area CFA11:  
Stoke Mandeville & Aylesbury

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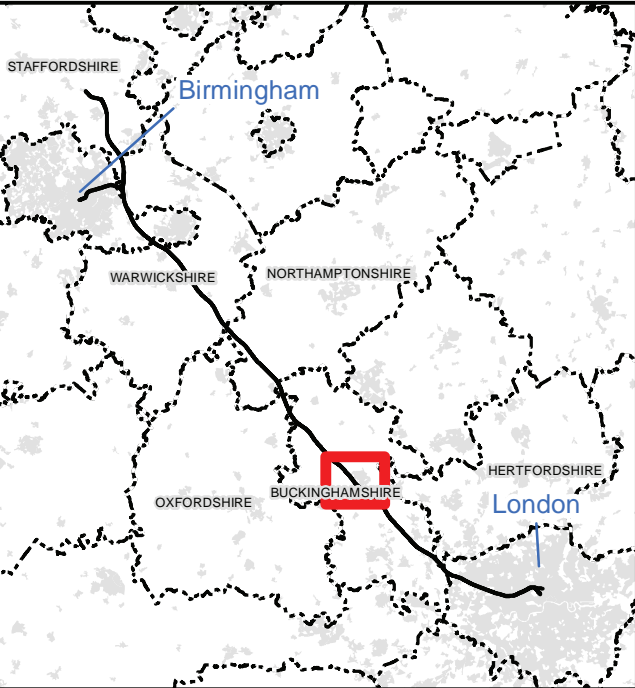
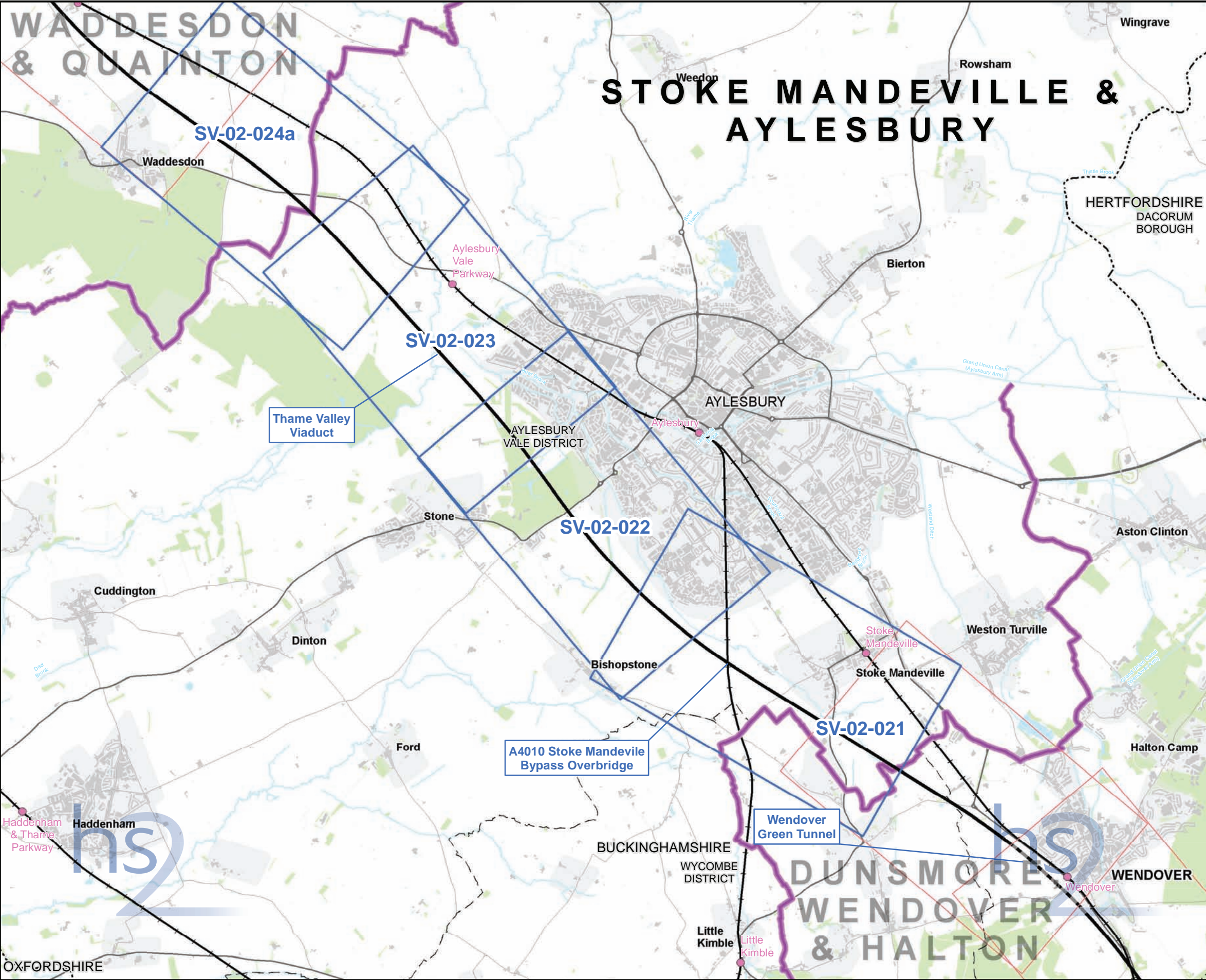
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Doc Number: C250-ARP-EV-MAP-000-004068--P04.00

Date: 29/10/13





**Map Series Information:**

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-02-INDEX-CFA11

Map Name

Index Map of:  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA11:

Stoke Mandeville & Aylesbury

hs2

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London SW1E 5DU.

N

Scale at A3: 1:50,000

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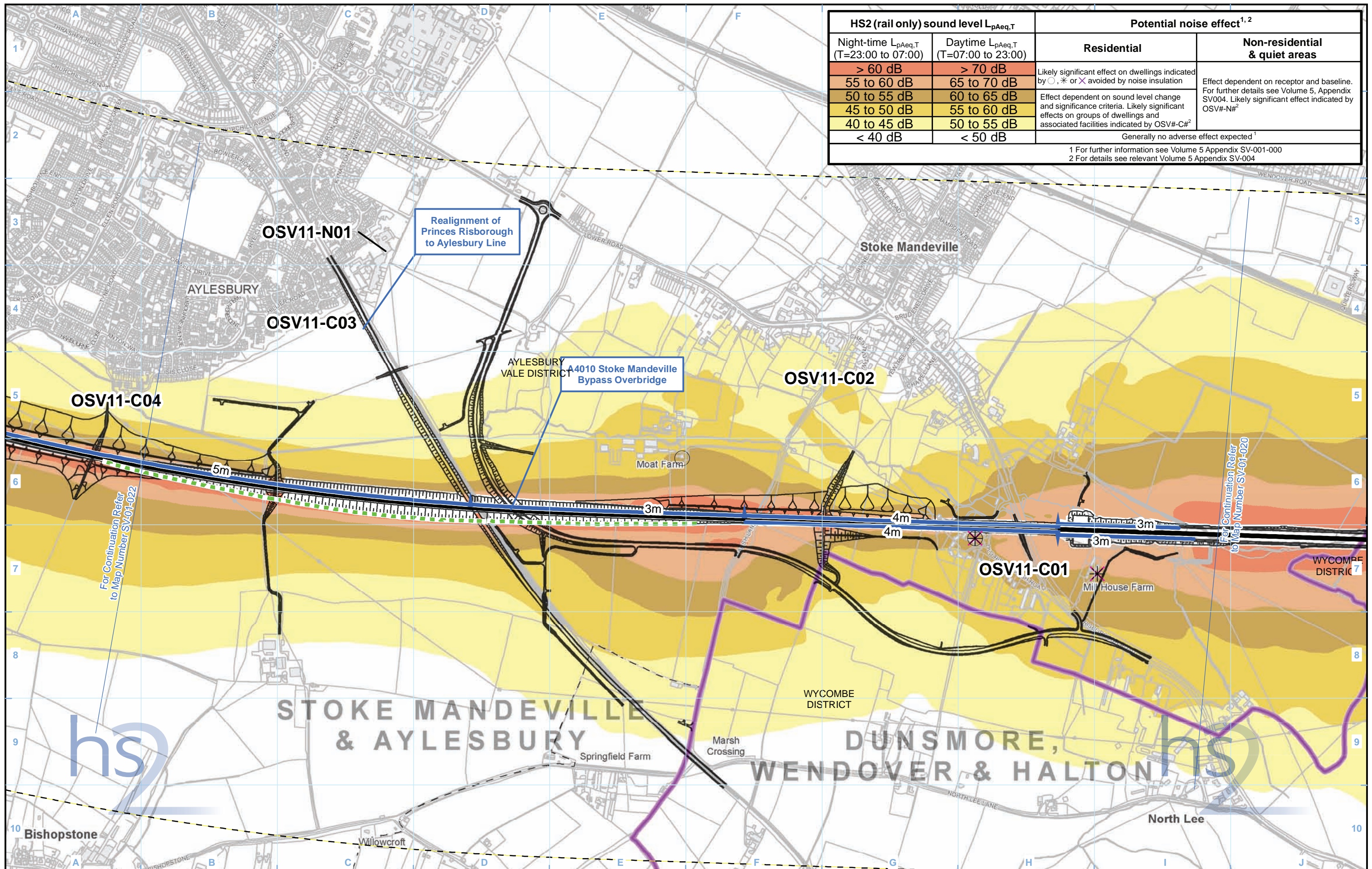
Metres

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Doc Number: C250-ARP-EV-MAP-000-004093--P04.00

Date: 29/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Map Number  
**SV-01-021**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA11:  
Stoke Mandeville & Aylesbury

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Doc Number: C250-ARP-EV-MAP-000-003563

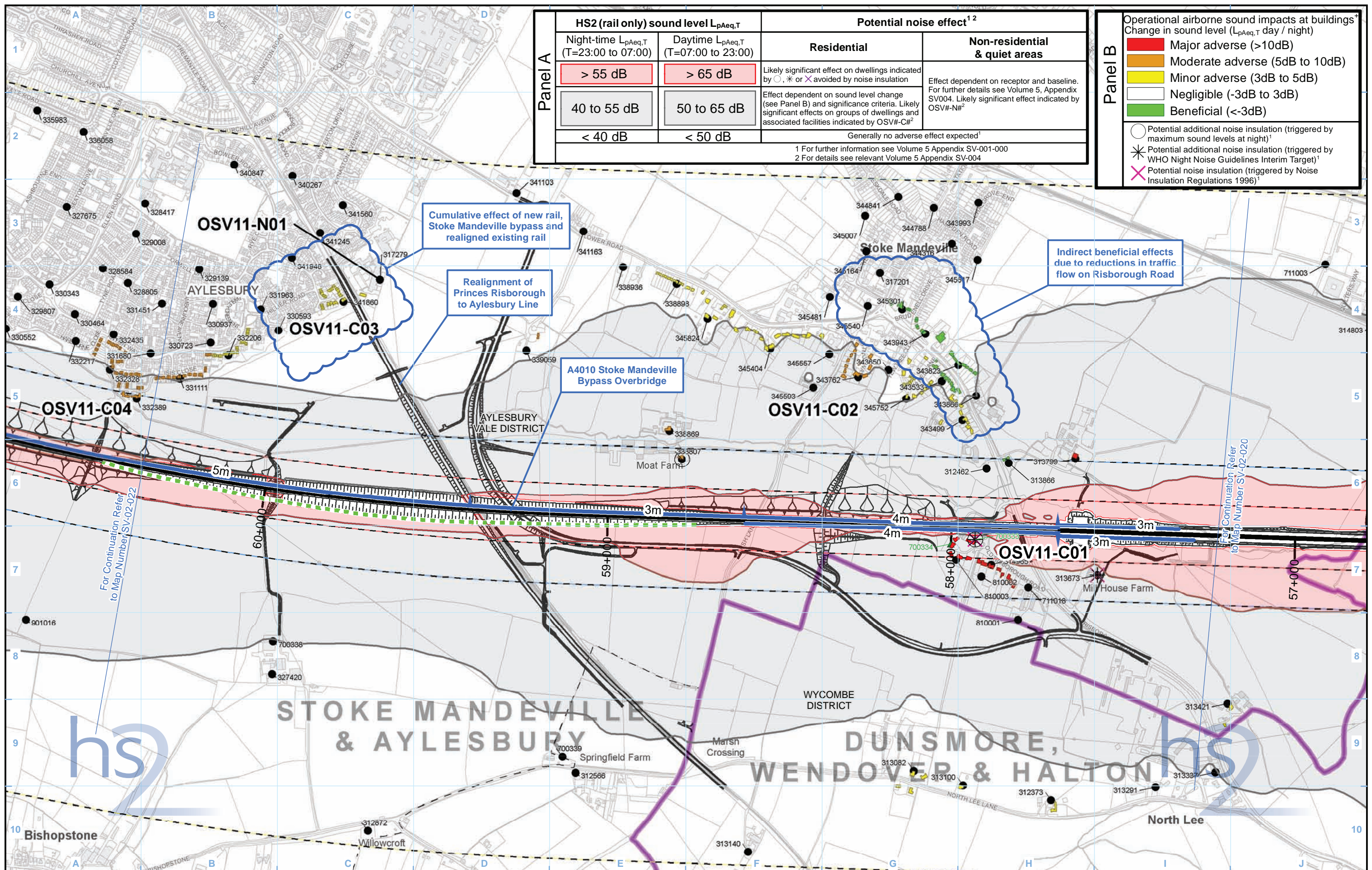
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0 100 200 300 400 Metres

Date: 29/10/13

\* Labelled with total barrier height above rail level





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N#
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C#	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✕ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

**Map Number**  
SV-02-021

**Map Name**  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

**Community Forum Area CFA11:**  
Stoke Mandeville & Aylesbury

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place, London SW1E 5DU.

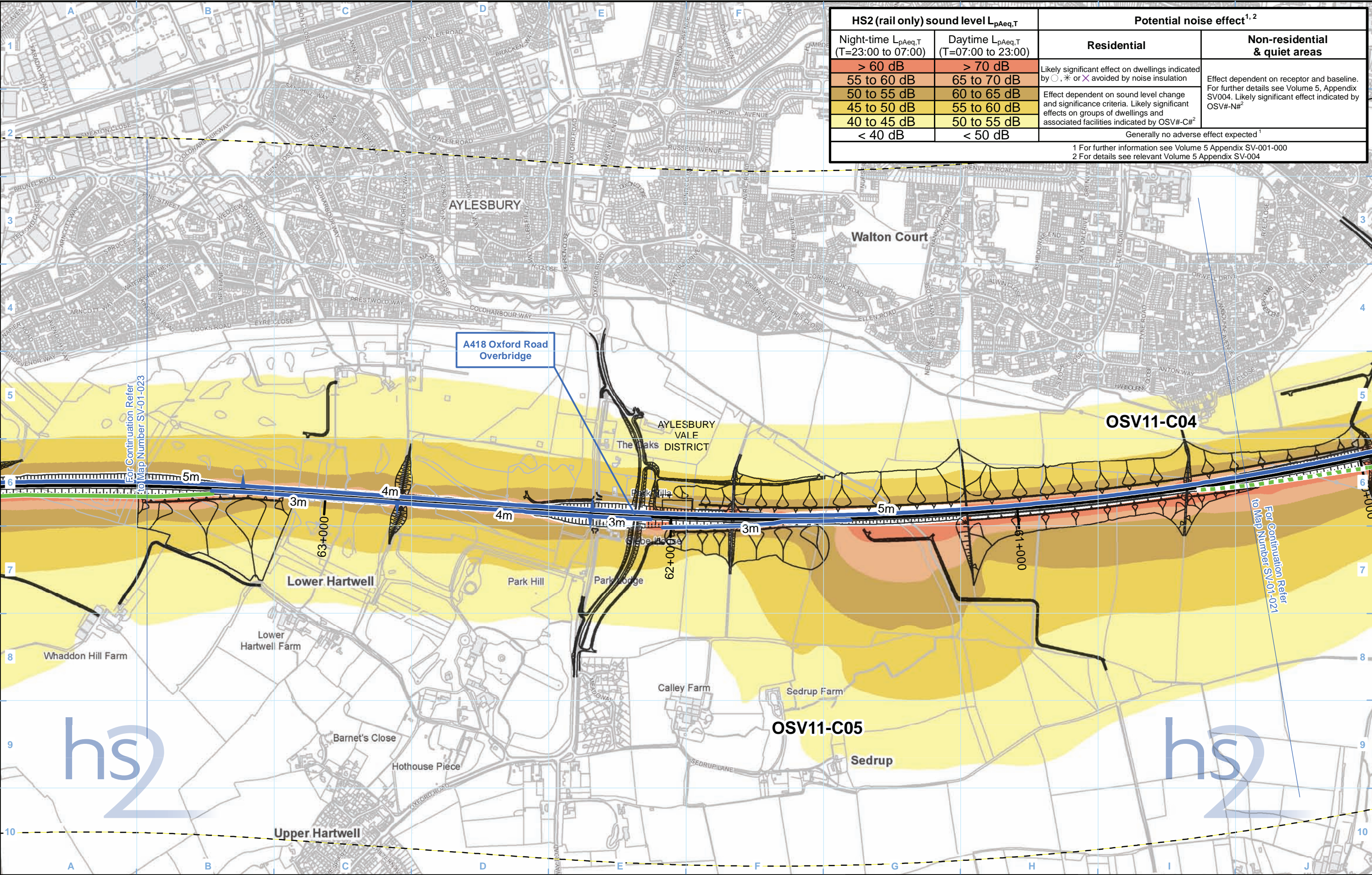
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Doc Number: C250-ARP-EV-MAP-000-003673

Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-022

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA11:

Stoke Mandeville & Aylesbury



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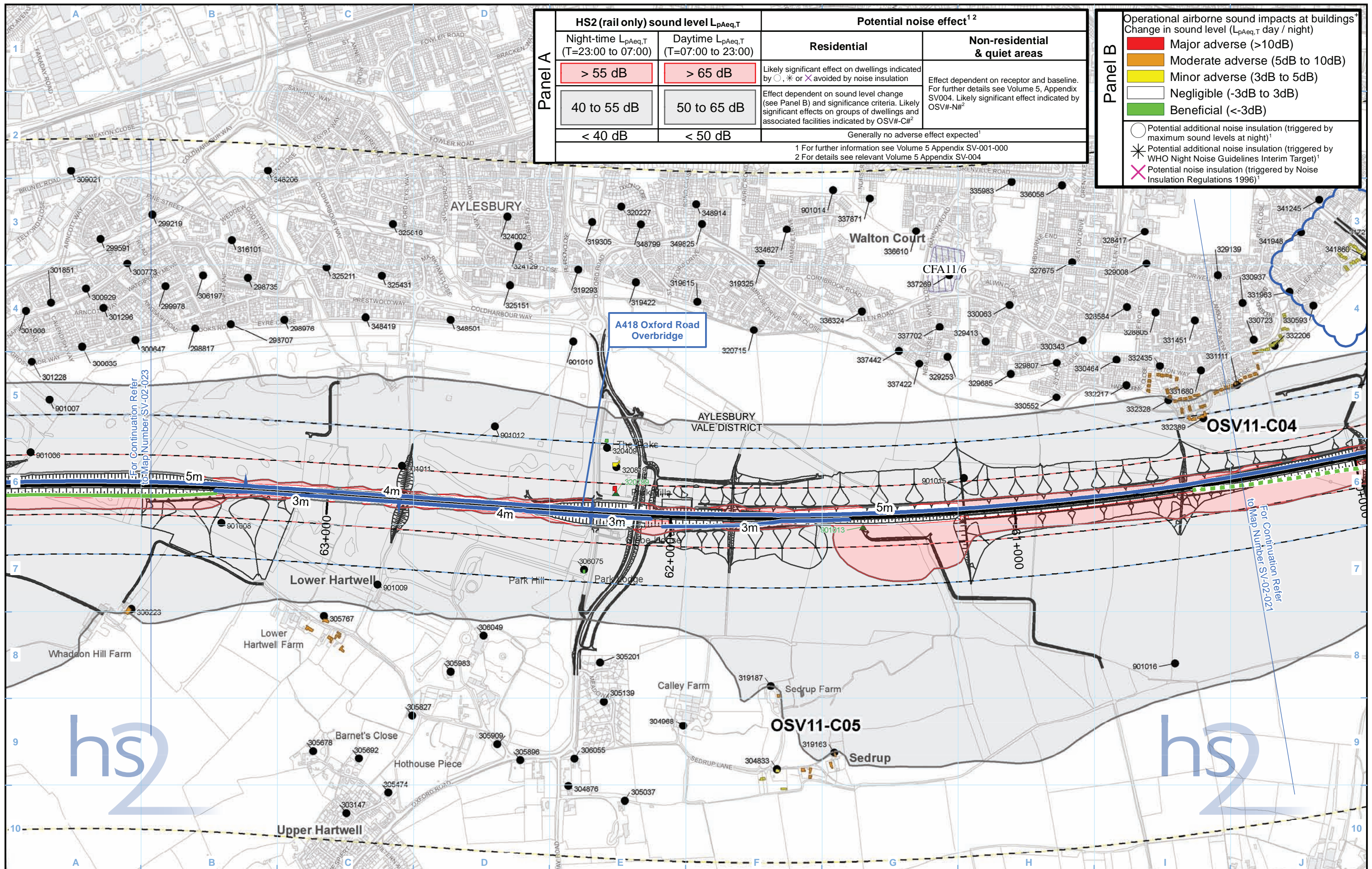
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Doc Number: C250-ARP-EV-MAP-000-003564

Scale at A3: 1:10,000

Date: 29/10/13





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004				

Panel B

Operational airborne sound impacts at buildings\*  
Change in sound level (L<sub>pAeq,T</sub> day / night)

Major adverse (>10dB)

Moderate adverse (5dB to 10dB)

Minor adverse (3dB to 5dB)

Negligible (-3dB to 3dB)

Beneficial (<-3dB)

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

\* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks: 

Embankment

Cutting

Non engineering earthworks: 

Embankment

Cutting

\* Residential buildings only

\* Labelled with total barrier height above rail level

Legend - Sound related features

Committed developments (label as CFA#/#)

Envisaged mitigation to avoid / reduce significant noise effects: 

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects: 

Other environmental features e.g. landscaping

Engineering e.g. cuttings

Airborne sound study area

Ground-borne sound & vibration study area (residential and non-residential)

Ground-borne sound & vibration study area (highly sensitive non-residential)

Airborne sound assessment location

Airborne sound and vibration assessment location

Ground-borne sound and/or vibration assessment location

Airborne sound, ground-borne sound and vibration assessment location

Minor ground-borne noise or vibration impact\*

Map Number

SV-02-022

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA11: Stoke Mandeville & Aylesbury

hs2

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Registered office: Eland House, Bressenden Place,  
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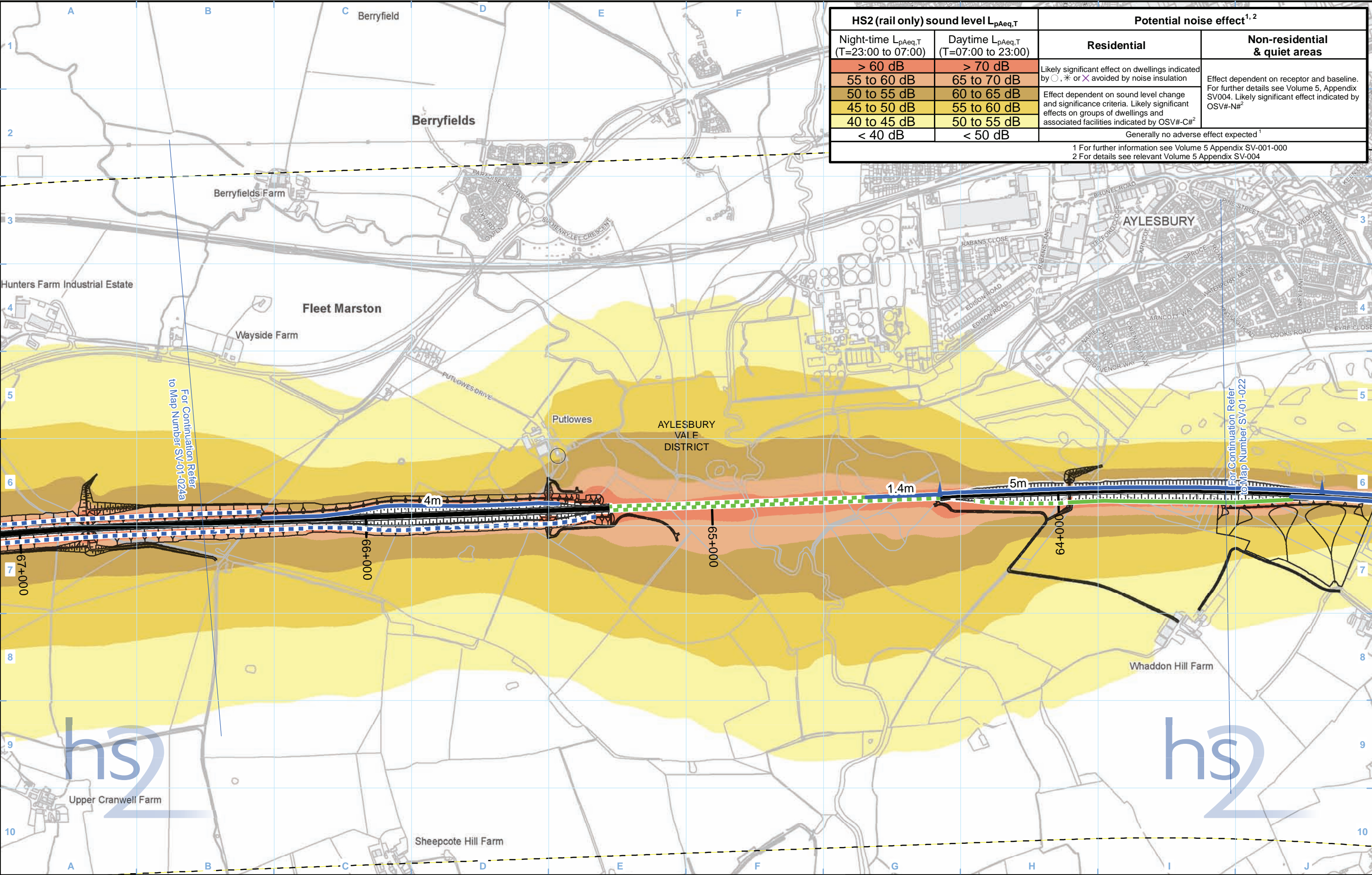
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Doc Number: C250-ARP-EV-MAP-000-003674

Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-023

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA11:

Stoke Mandeville & Aylesbury

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

Scale at A3: 1:10,000

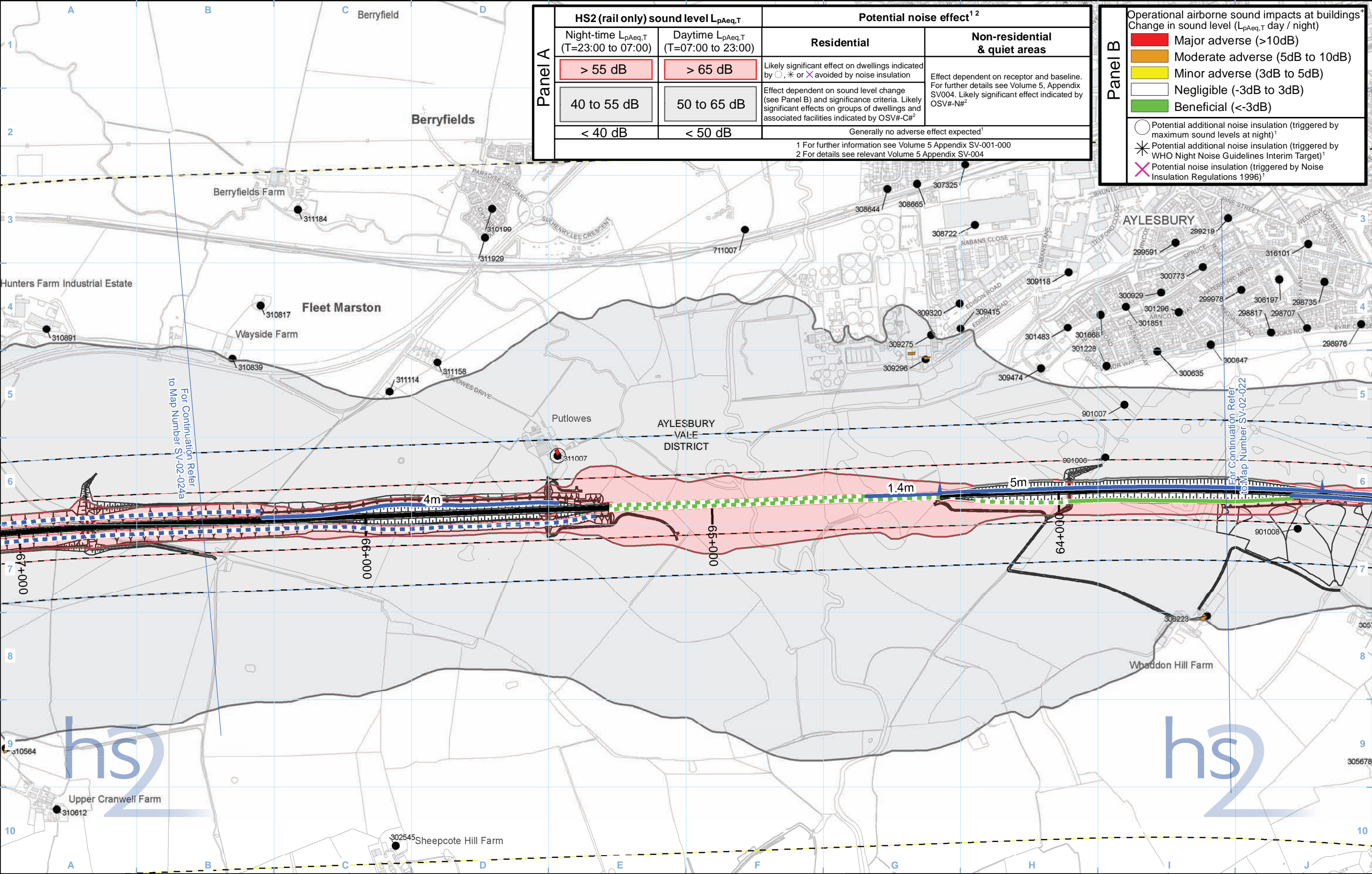
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Doc Number: C250-ARP-EV-MAP-000-003565

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting
- \* Residential buildings only
- \* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number  
SV-02-023

Map Name  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA11:  
Stoke Mandeville & Aylesbury

hs2

Registered in England. Registration number 06791686.  
Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

Scale at A3: 1:10,000

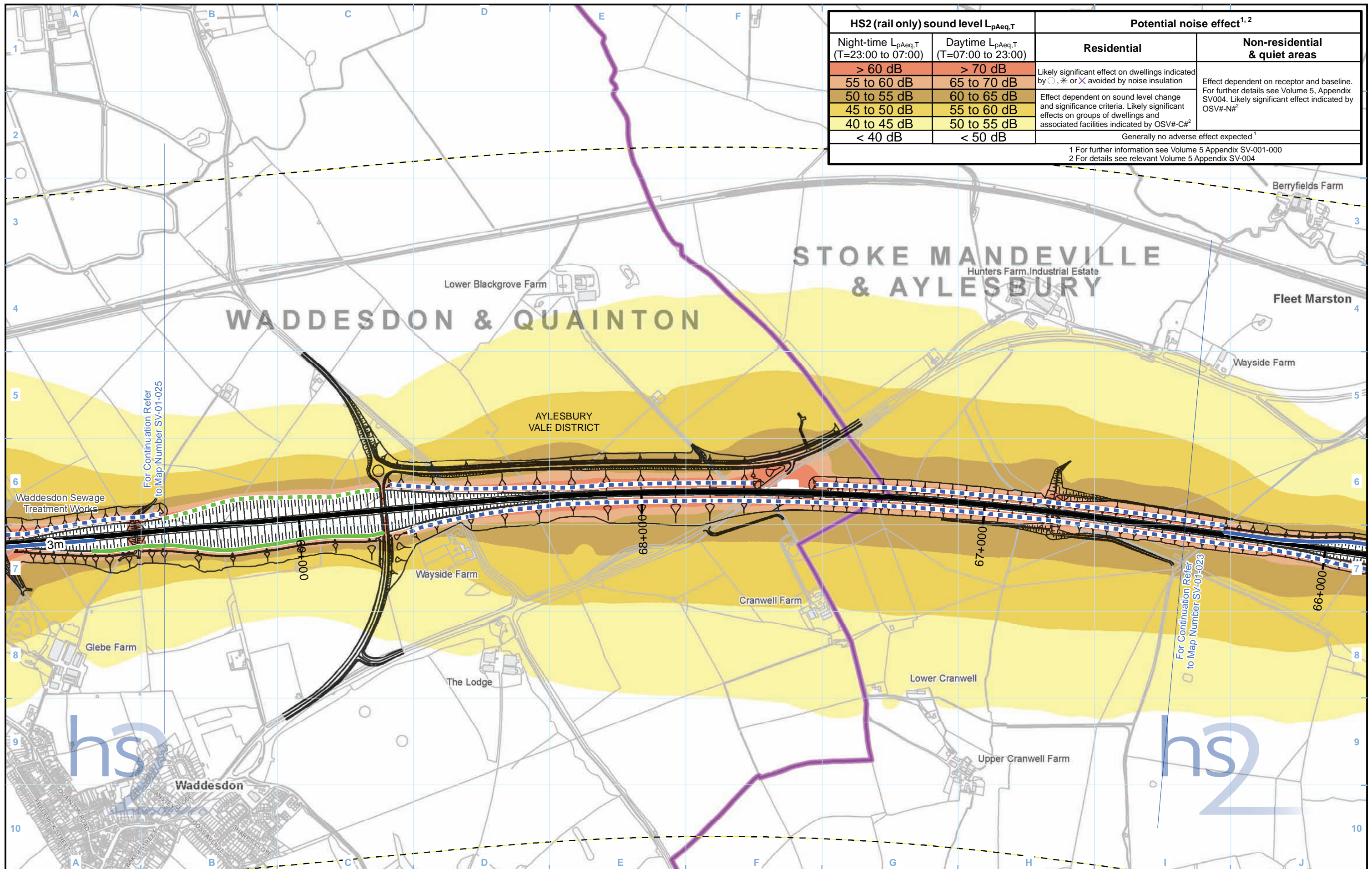
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Doc Number: C250-ARP-EV-MAP-000-003675

Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

**Map Number**  
SV-01-024a

**Map Name**  
Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA11:  
Stoke Mandeville & Aylesbury

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Doc Number: C250-ARP-EV-MAP-000-003566

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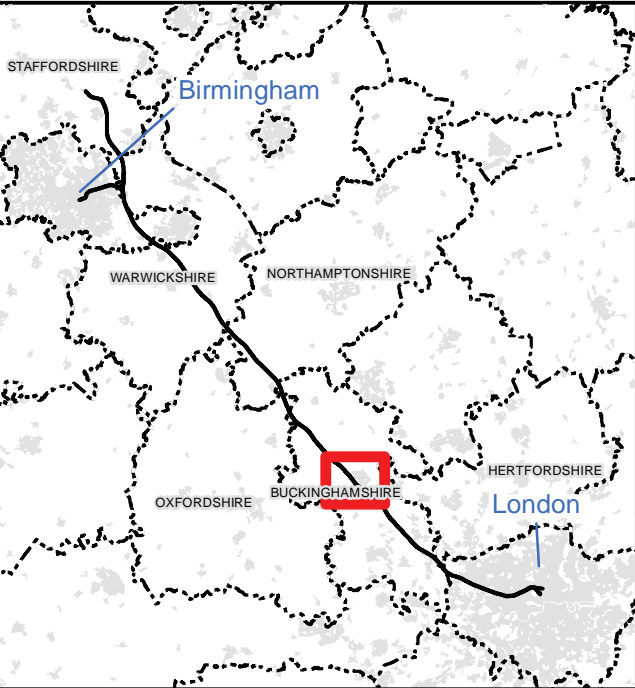
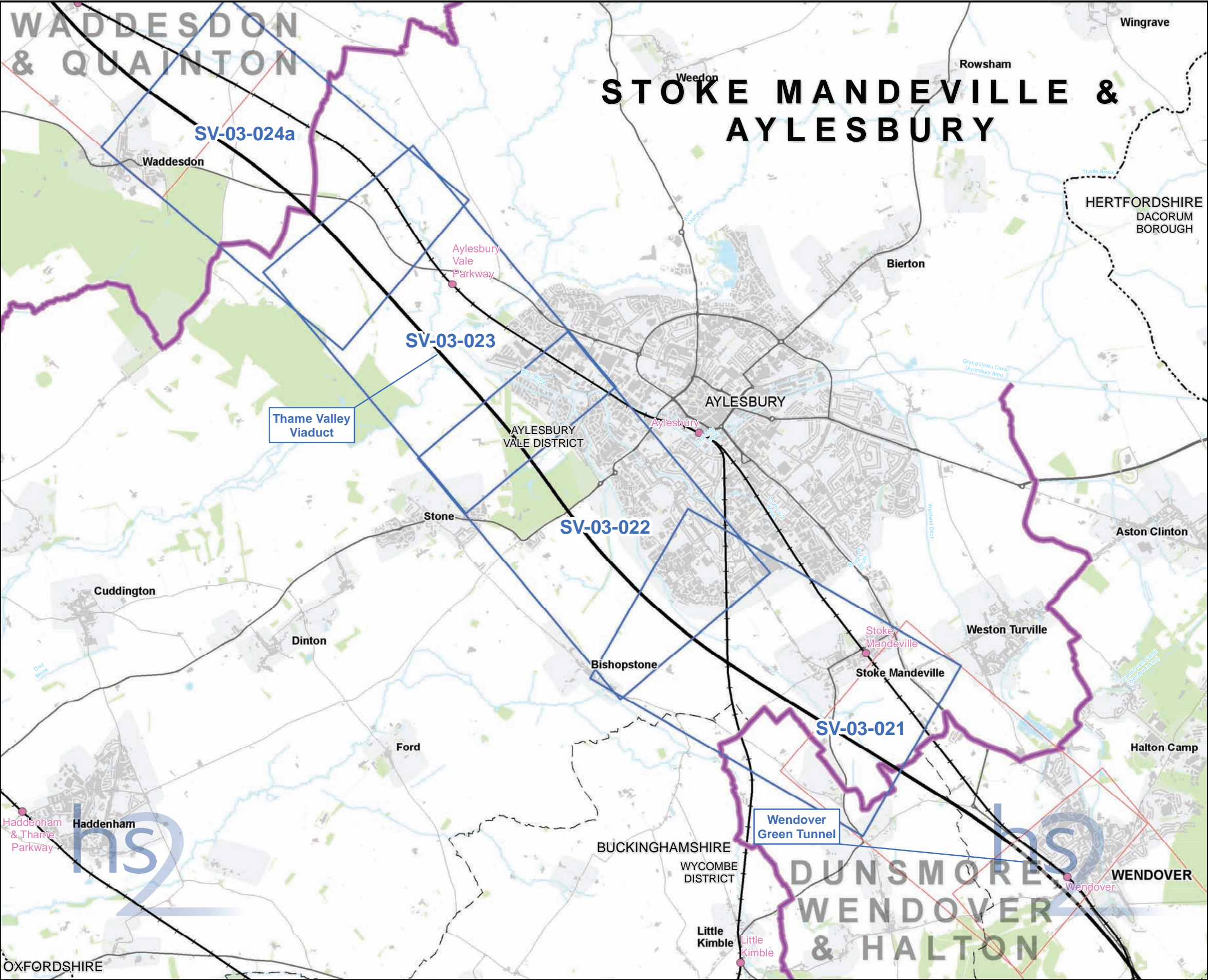
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Metres

Date: 29/10/13









**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA11

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA11:

Stoke Mandeville & Aylesbury

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Registered office: Eland House, Bressenden Place,  
London SW1E 5DU.

N

Scale at A3: 1:50,000

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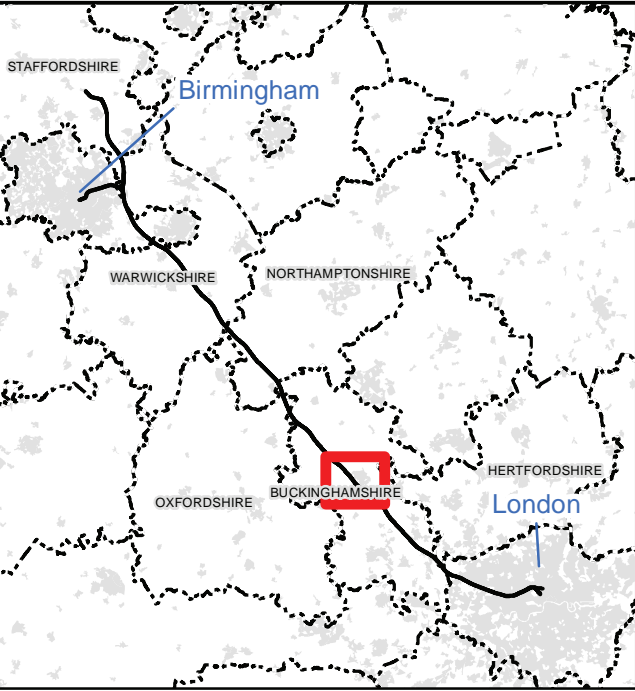
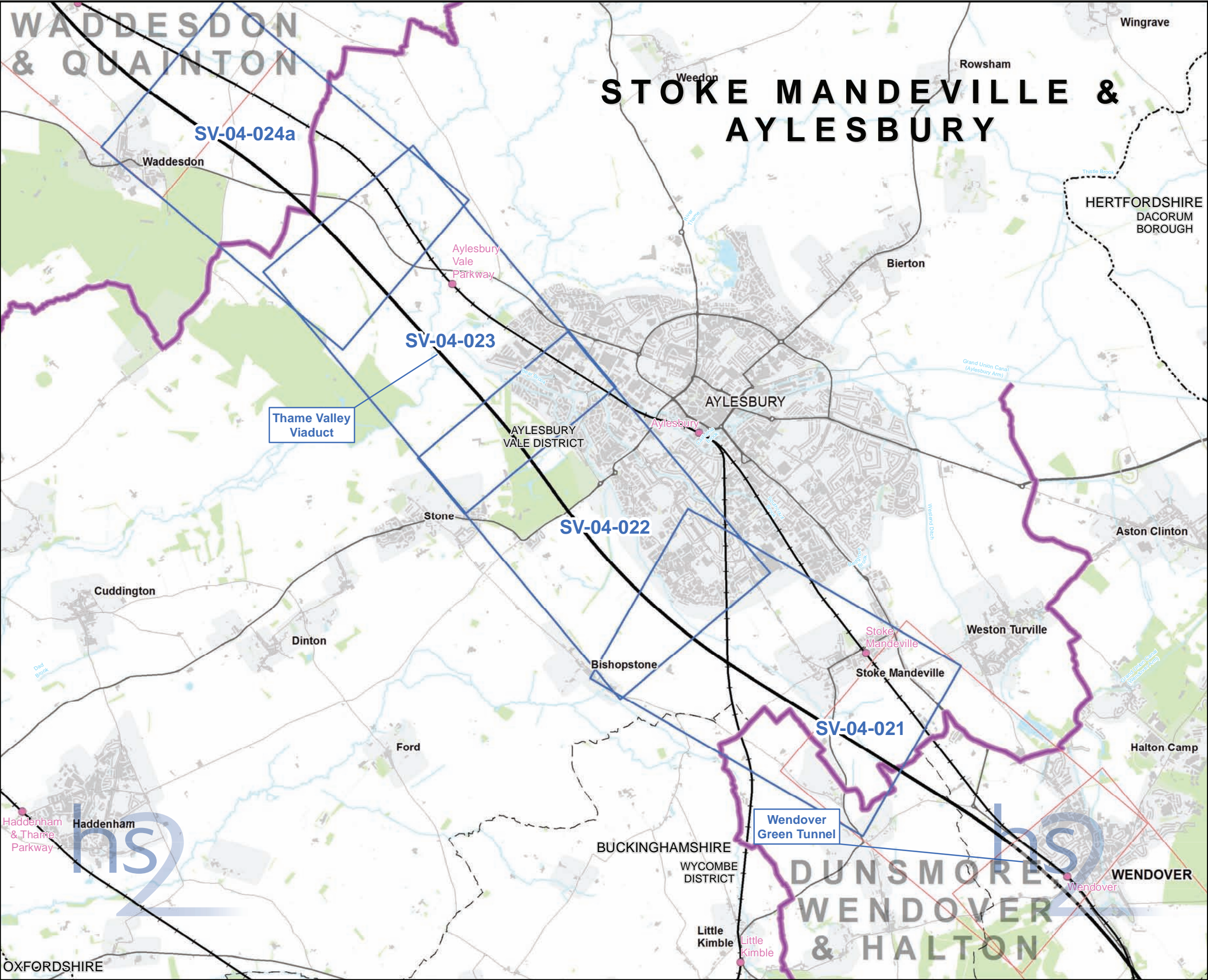
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Doc Number: C250-ARP-EV-MAP-000-004119-P06.00

Date: 29/10/13





### Map Series Information:

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA11

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA11:  
Stoke Mandeville & Aylesbury

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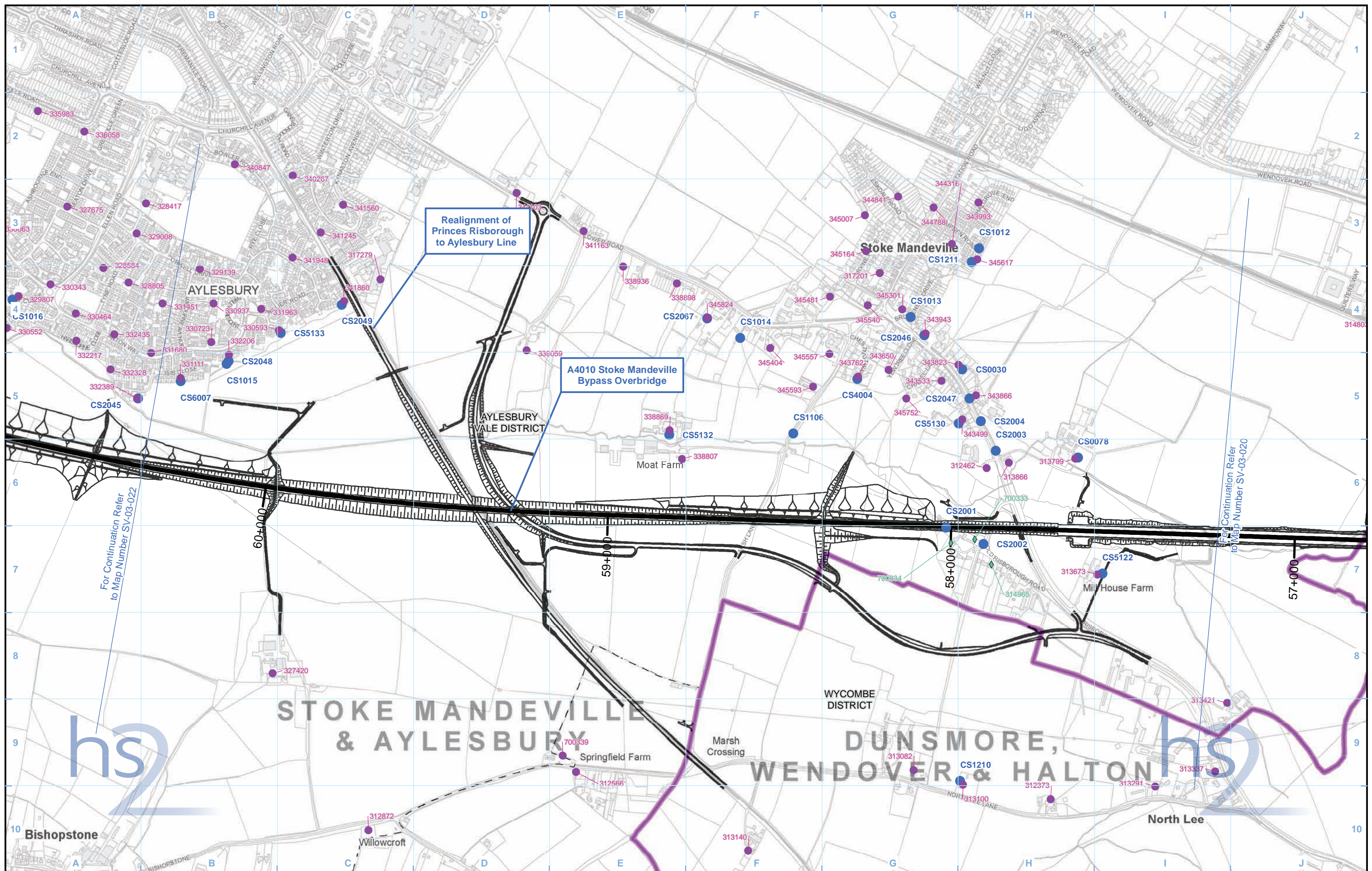
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Doc Number: C250-ARP-EV-MAP-000-004145--P04.00

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

labelled with Measurement Location reference code

Map Number

SV-03-021

Map Name

Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA11:  
Stoke Mandeville & Aylesbury

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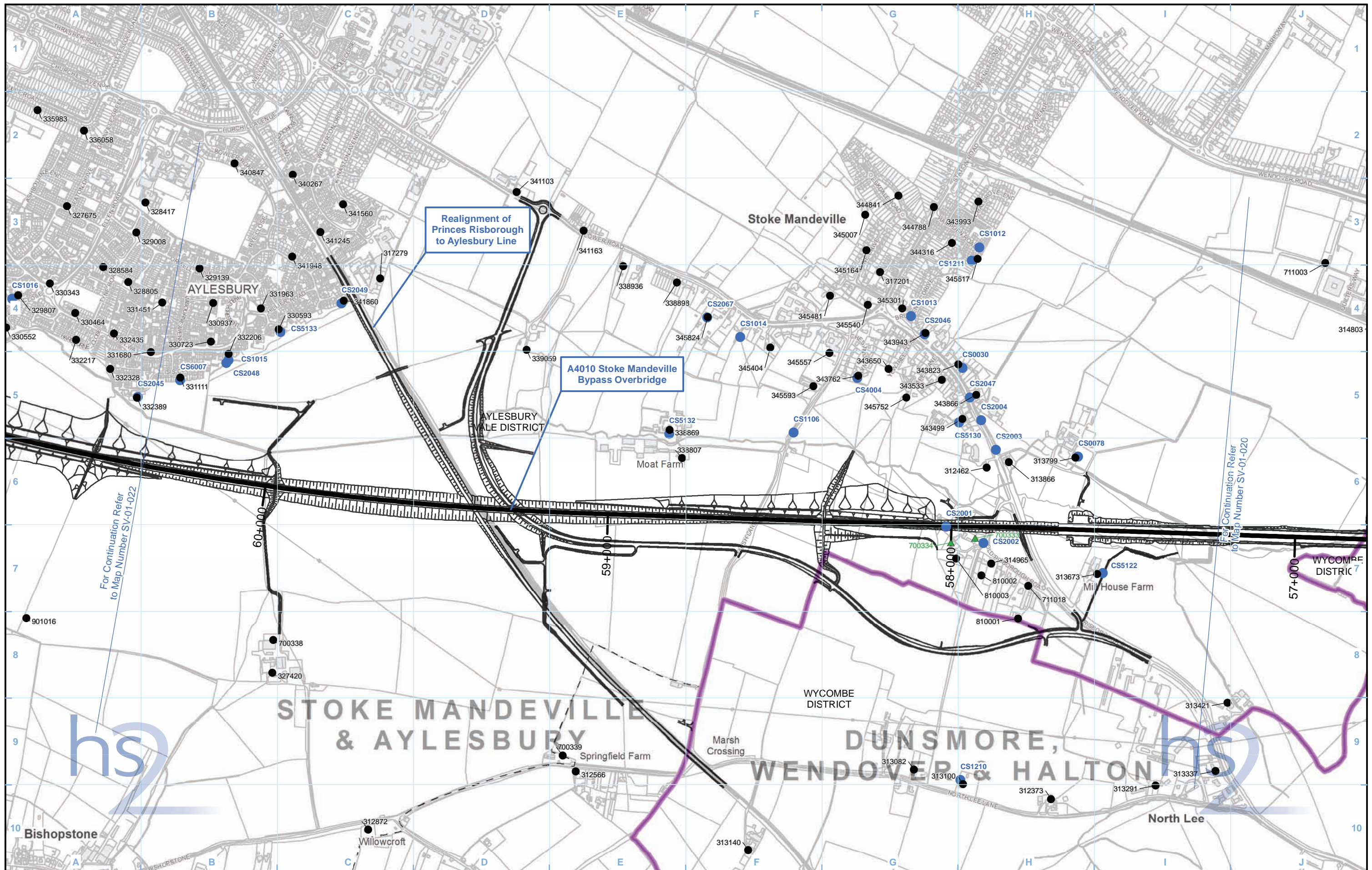
Doc Number: C250-ARP-EV-MAP-000-003774

Scale at A3: 1:10,000

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Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)


Map Number	SV-04-021
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA11: Stoke Mandeville & Aylesbury	




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Doc Number: C250-ARP-EV-MAP-000-003875



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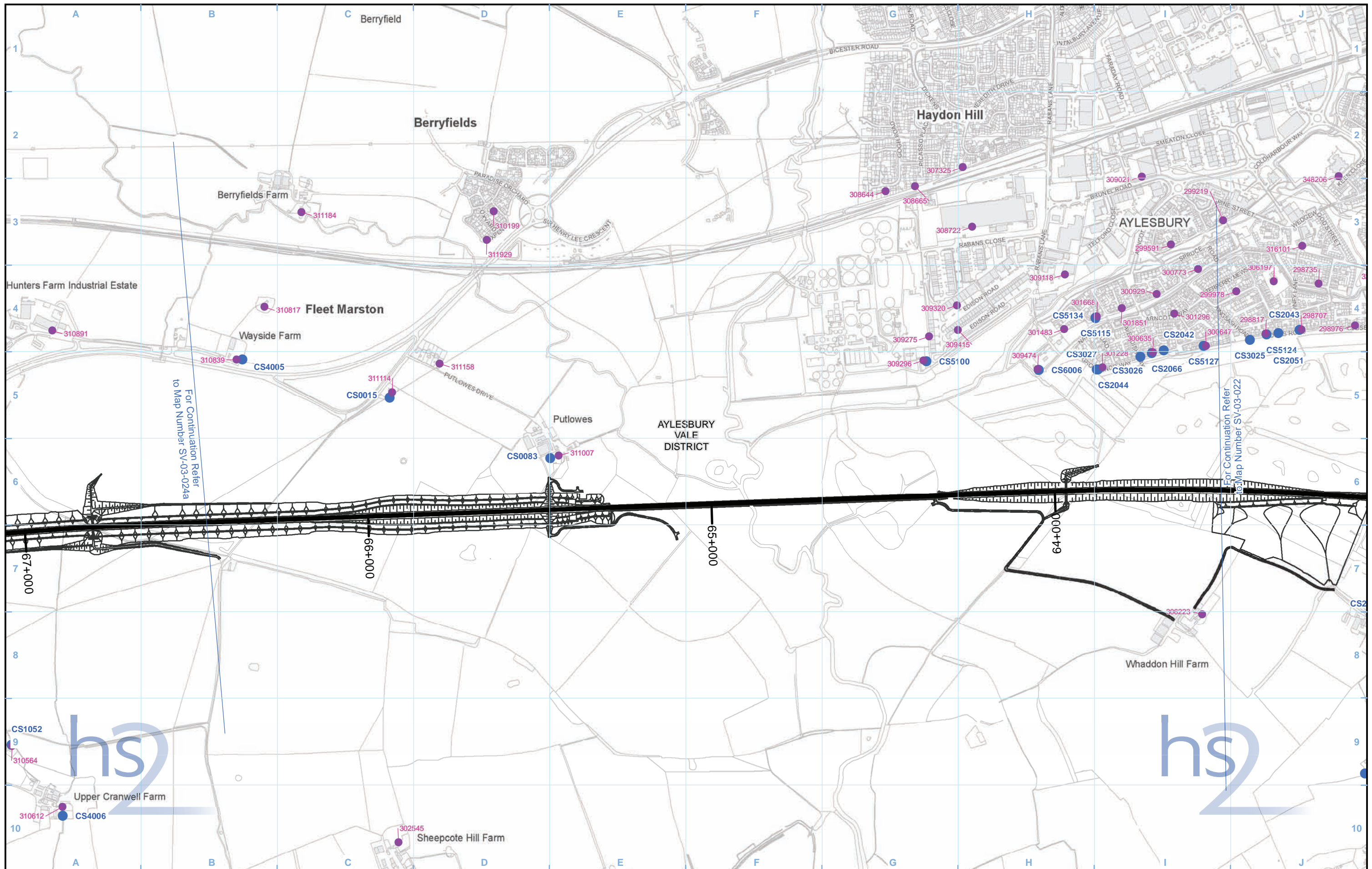






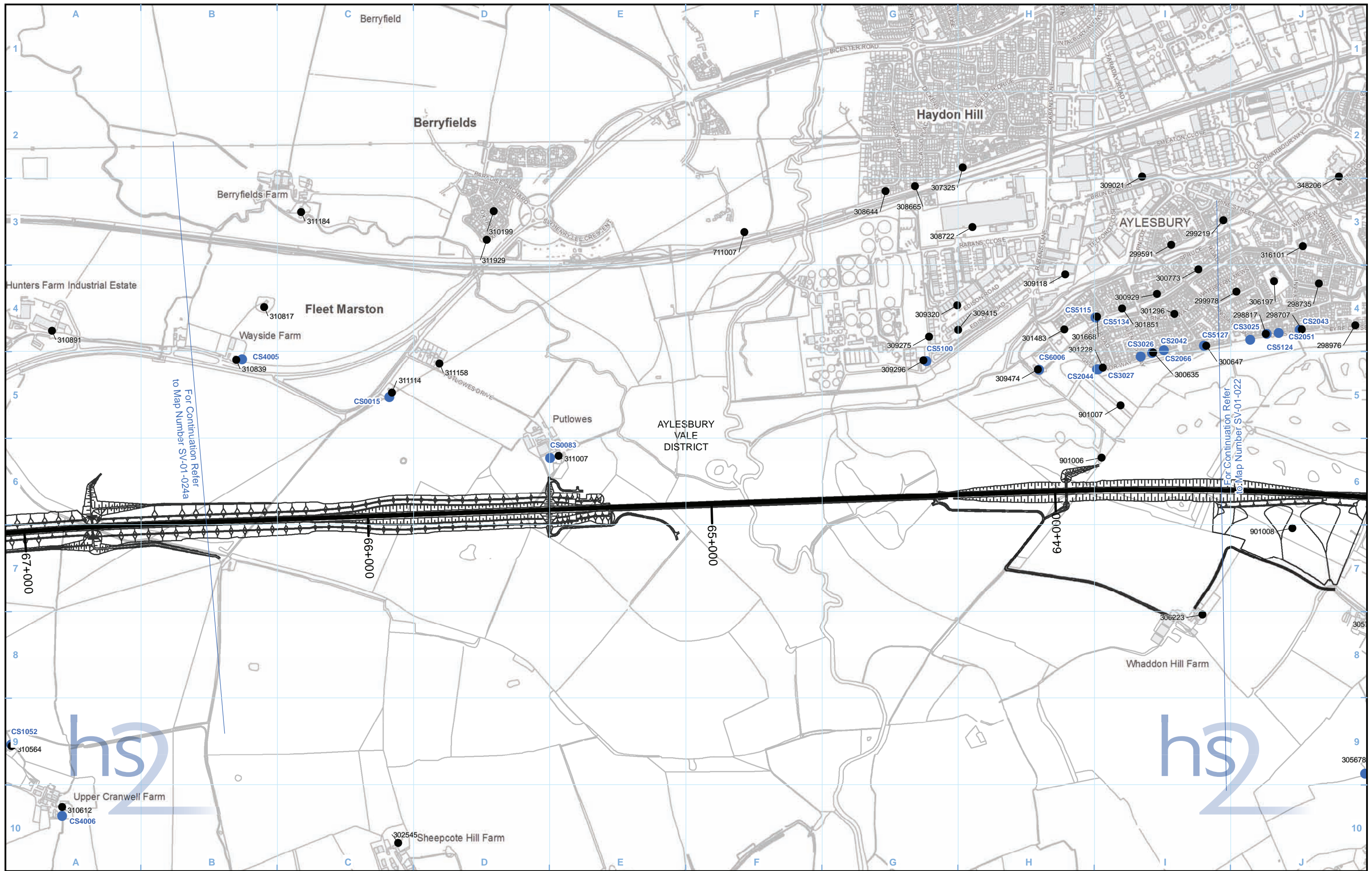






<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-03-023</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Doc Number: C250-ARP-EV-MAP-000-003776</p>
					Map Name <b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>	





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

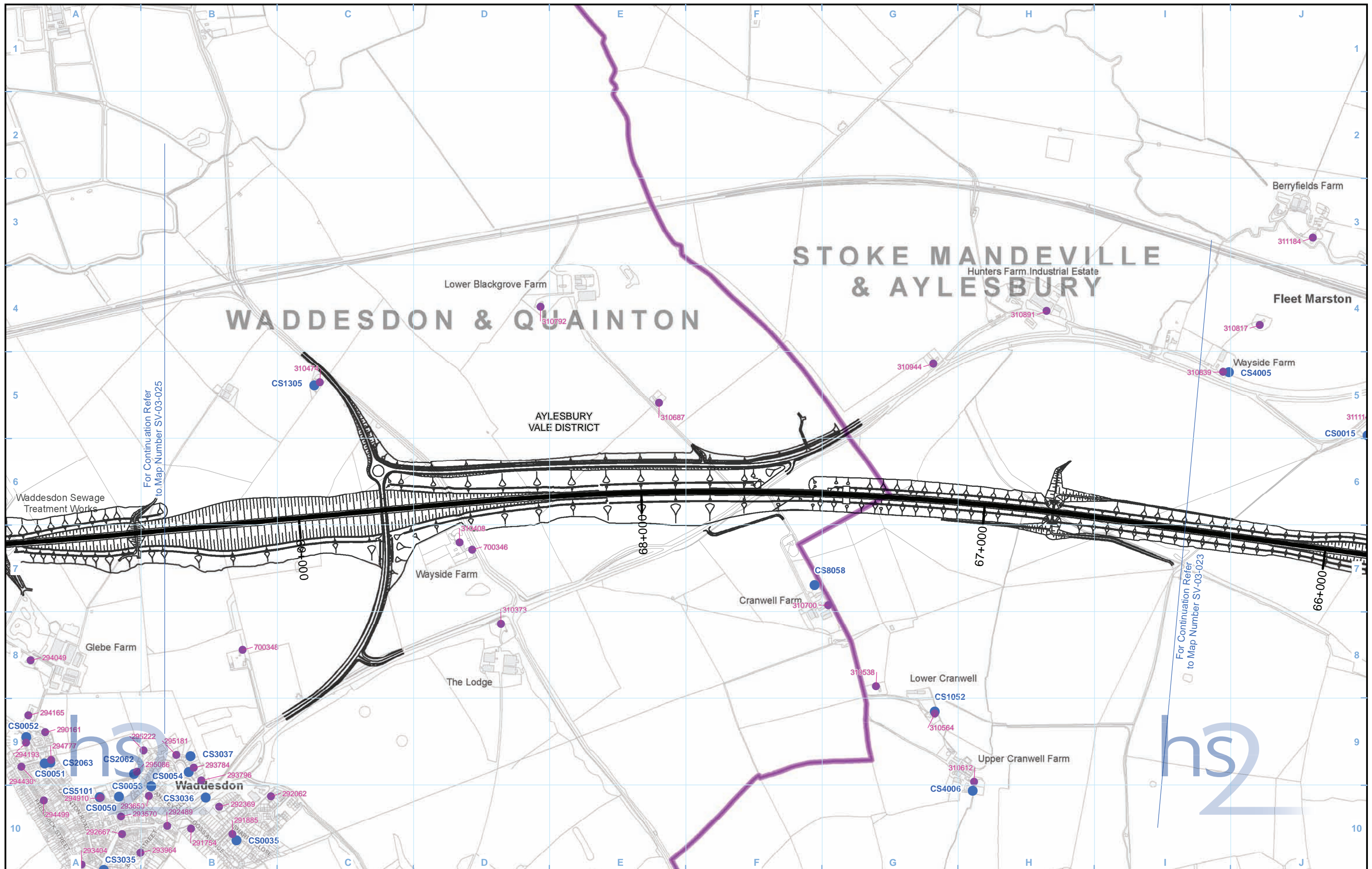
labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-023
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA11: Stoke Mandeville & Aylesbury	

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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-024a
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA11: Stoke Mandeville & Aylesbury	




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Date: 29/10/13







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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA12 | Waddesdon and Quainton

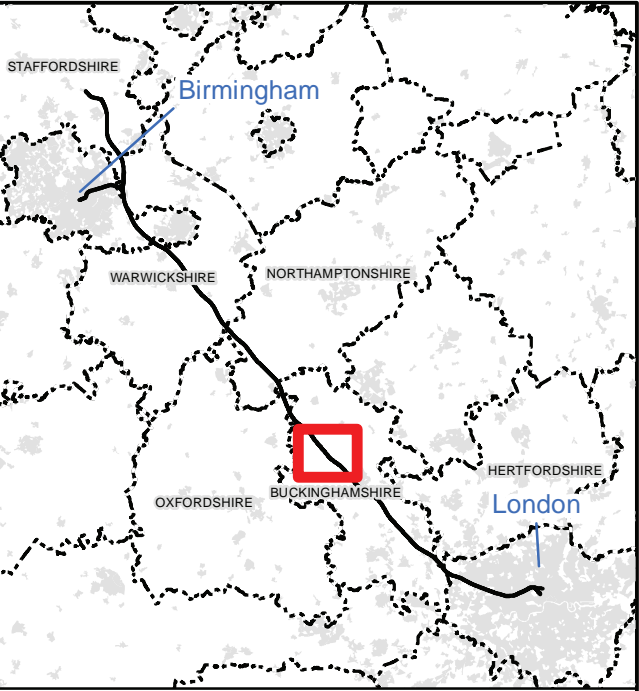
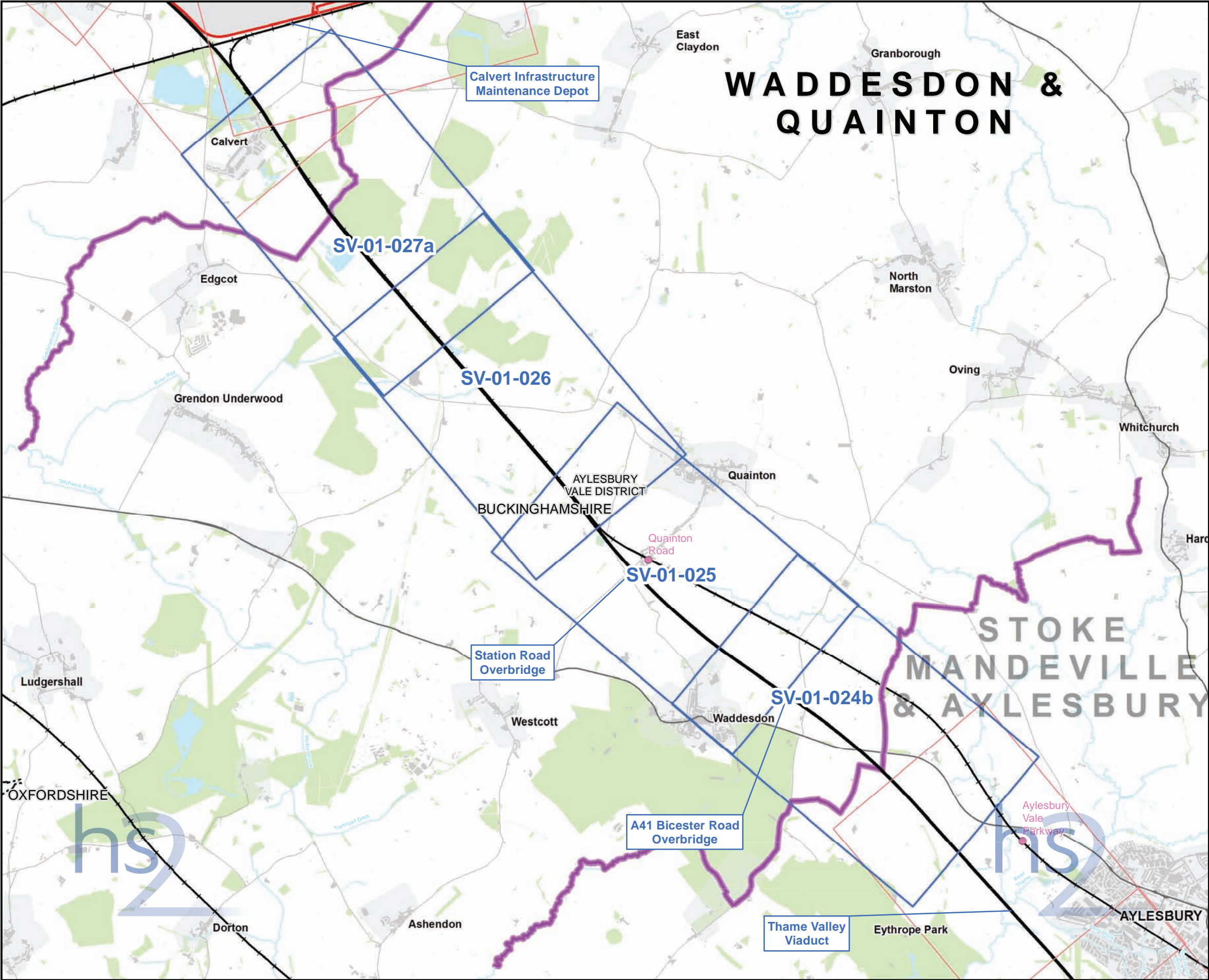
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





**Map Series Information:**

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

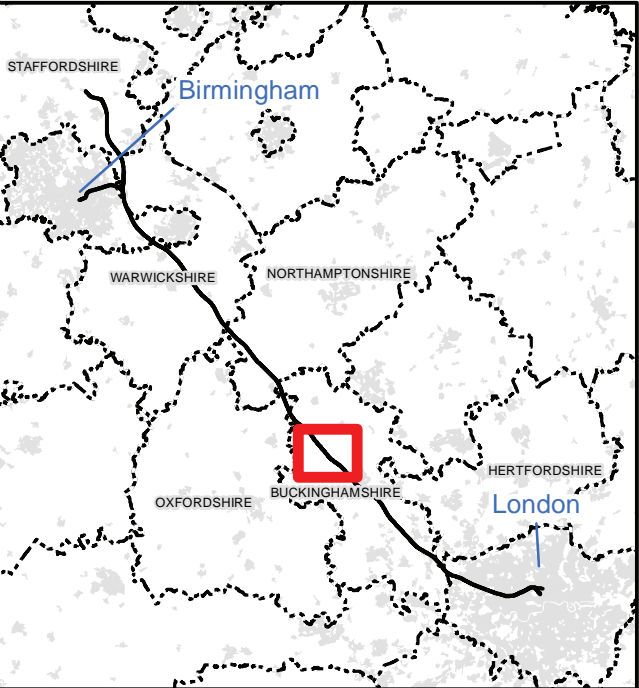
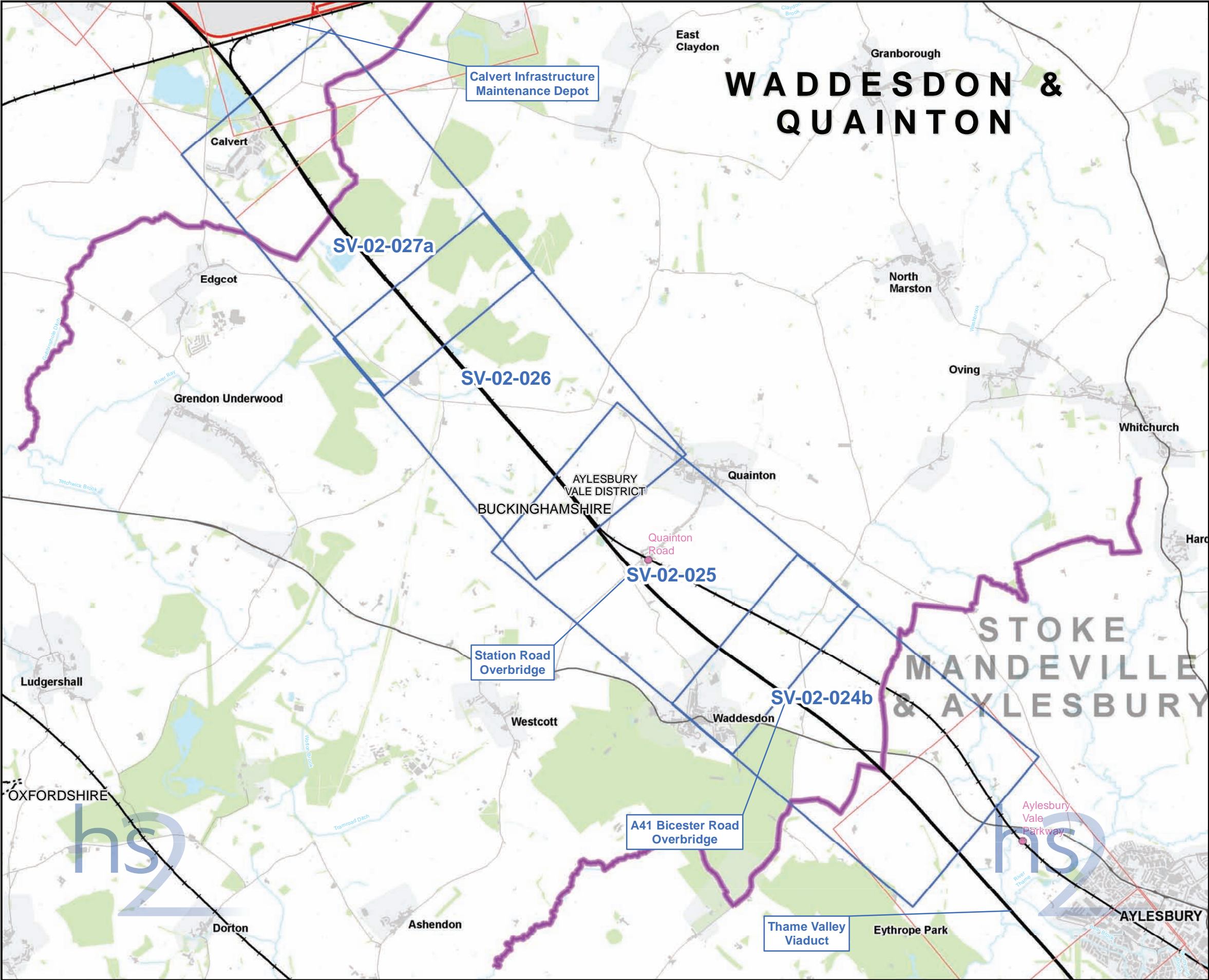
**Main Map Legend**

Route in tunnel	Map sheets included in this community forum
Route on surface	Map sheets not included in this community forum
Depot, station, headhouse or portal building	
Community forum boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-01-INDEX-CFA12
Map Name	Index Map of: Operational Sound Contour Maps and Likely Significant Effects
	Community Forum Area CFA12: Waddesdon & Quainton

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Doc Number: C250-ARP-EV-MAP-000-004069--P04.00		Date: 29/10/13





Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

Map Name

Community Forum Area CFA12: Waddesdon & Quainton

SV-02-INDEX-CFA12

Index Map of:  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA12:  
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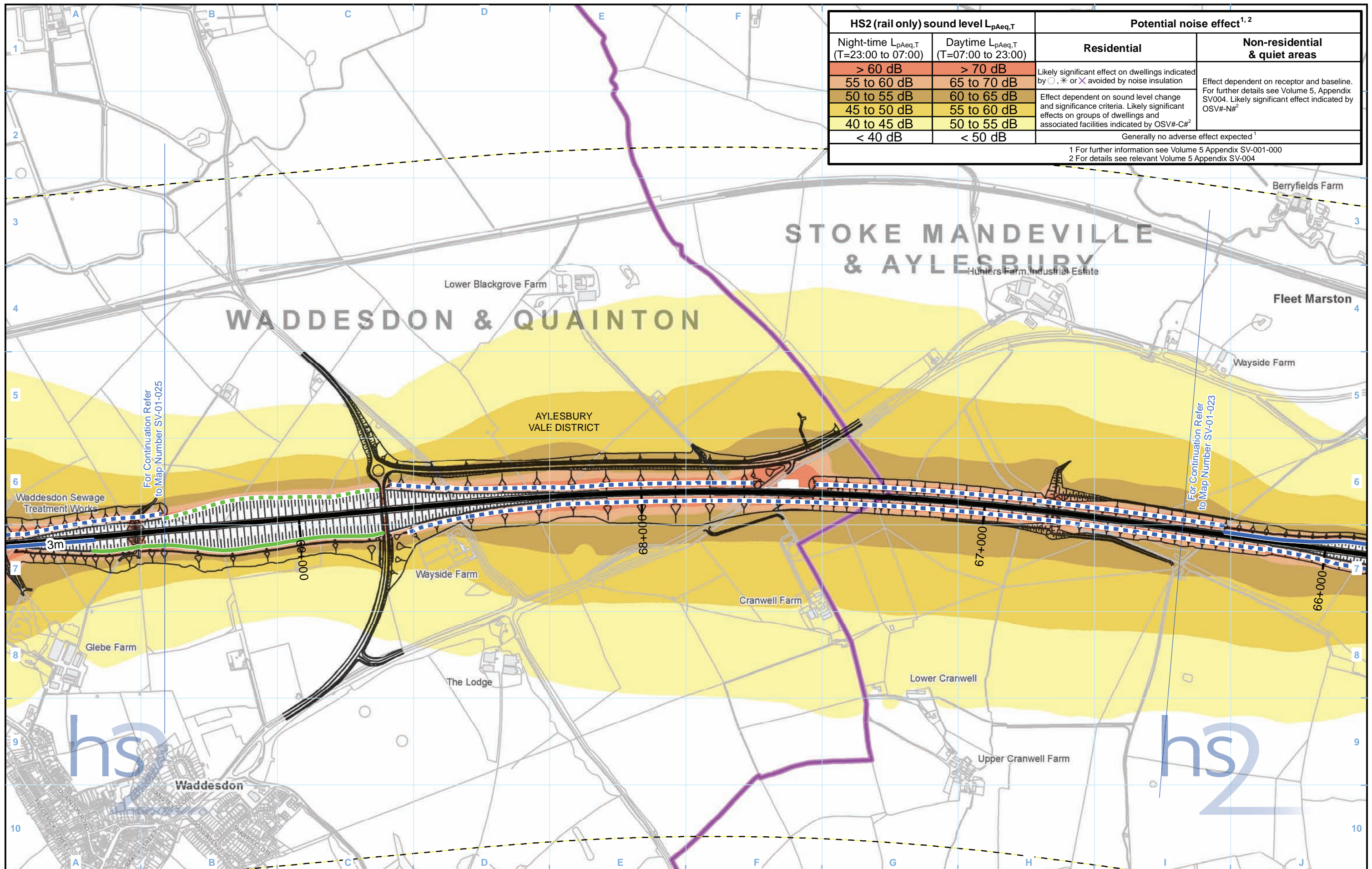
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Metres

Doc Number: C250-ARP-EV-MAP-000-004094--P04.00

Date: 29/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number  
**SV-01-024b**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA12:  
Waddesdon & Quainton

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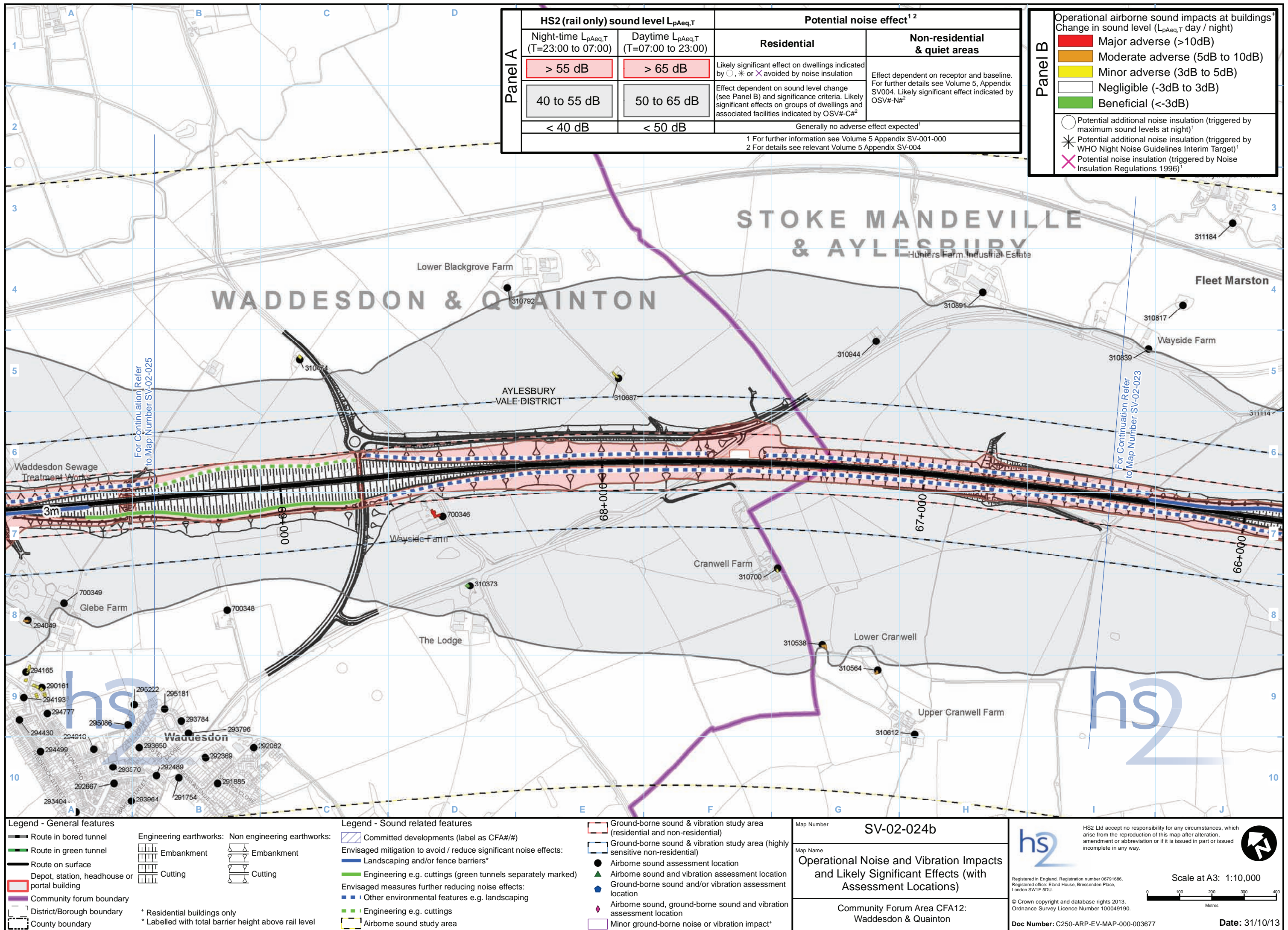
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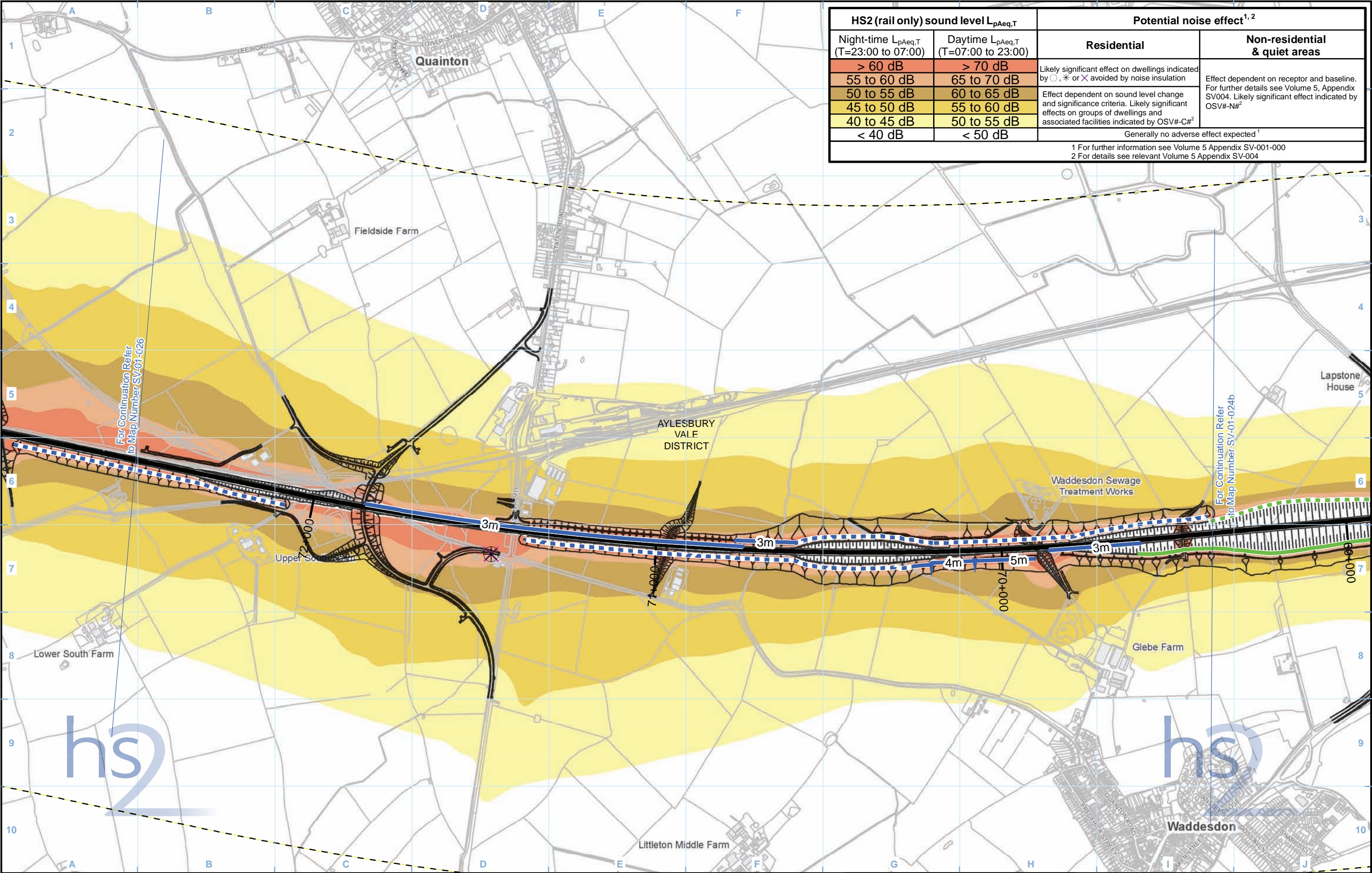
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Date: 29/10/13









HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

Other environmental e.g. landscaping

Engineering e.g. cuttings
- Airborne sound study area

Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>
- \* Labelled with total barrier height above rail level

Map Number

SV-01-025

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA12:

Waddesdon & Quainton

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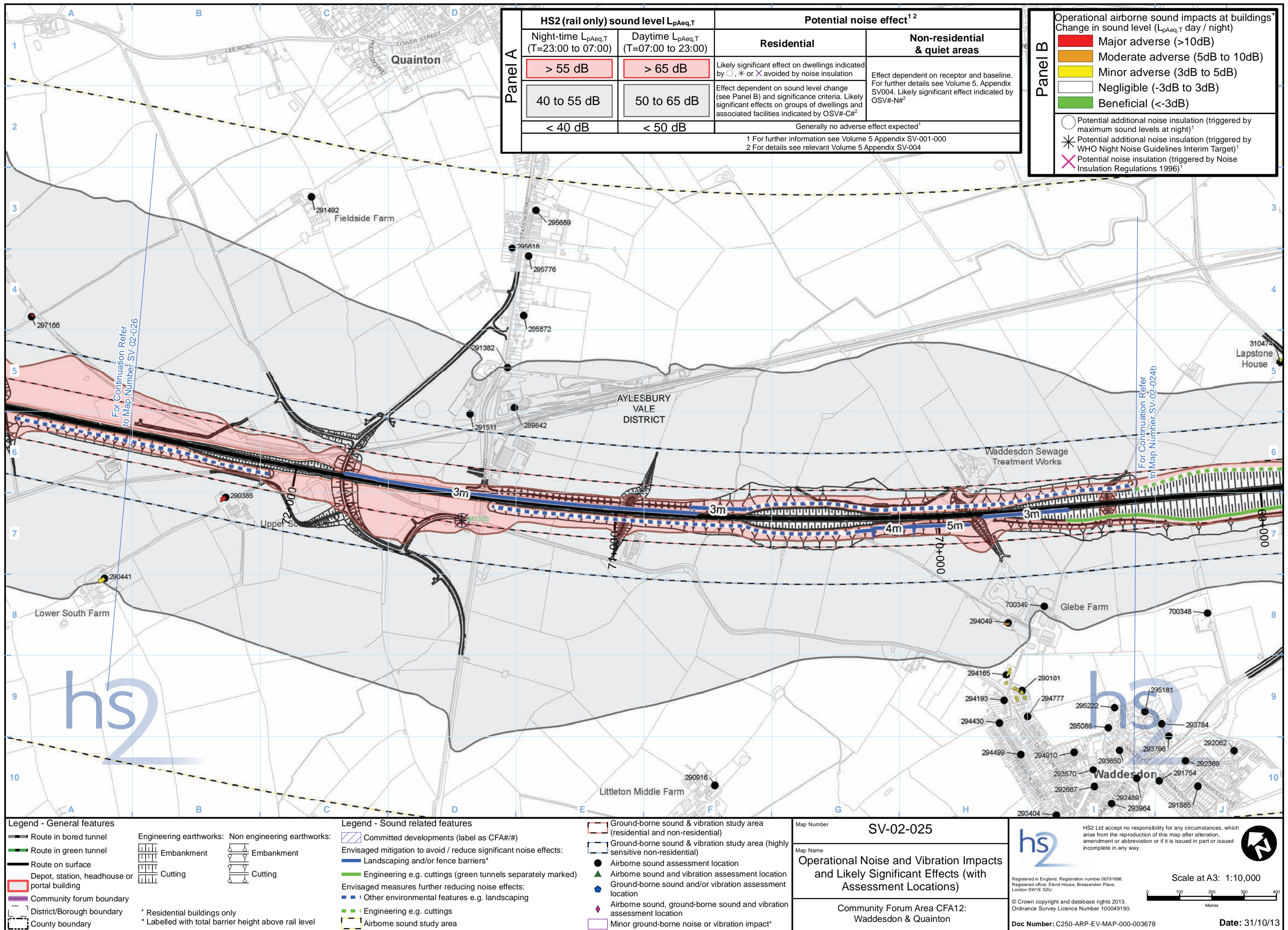
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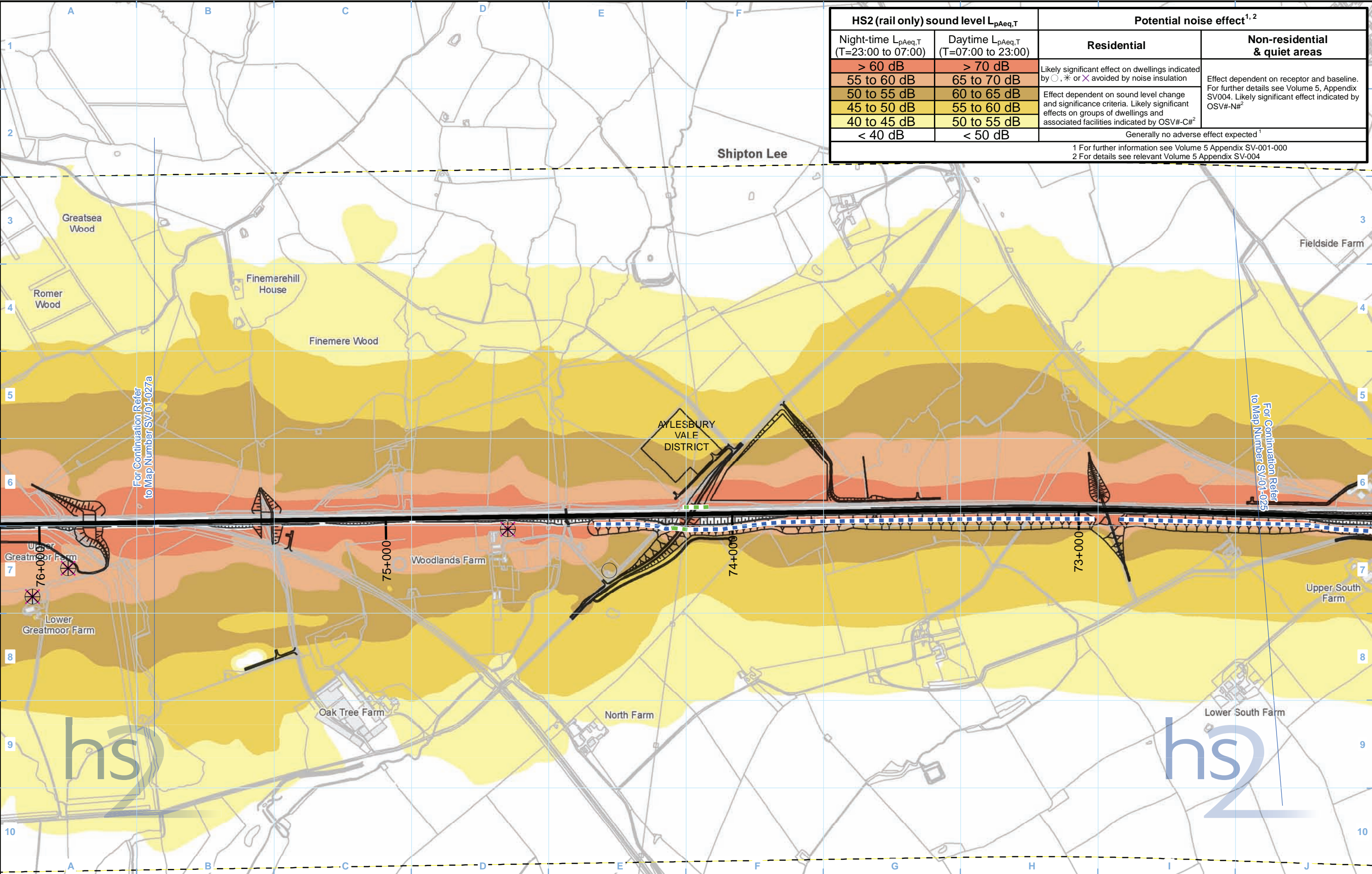
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Date: 29/10/13









HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-026

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA12:

Waddesdon & Quainton



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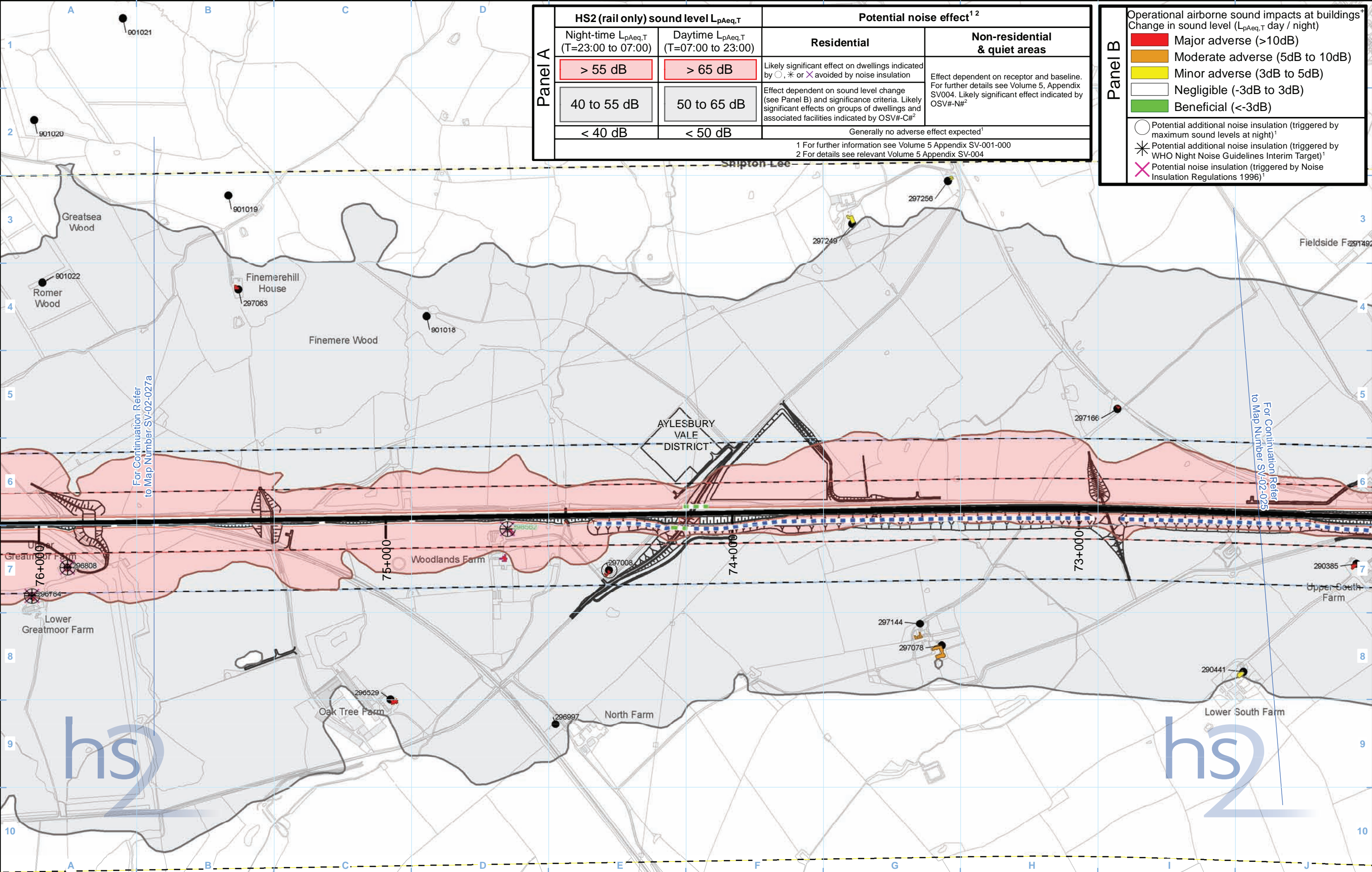
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Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only

\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-026

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA12: Waddesdon & Quainton

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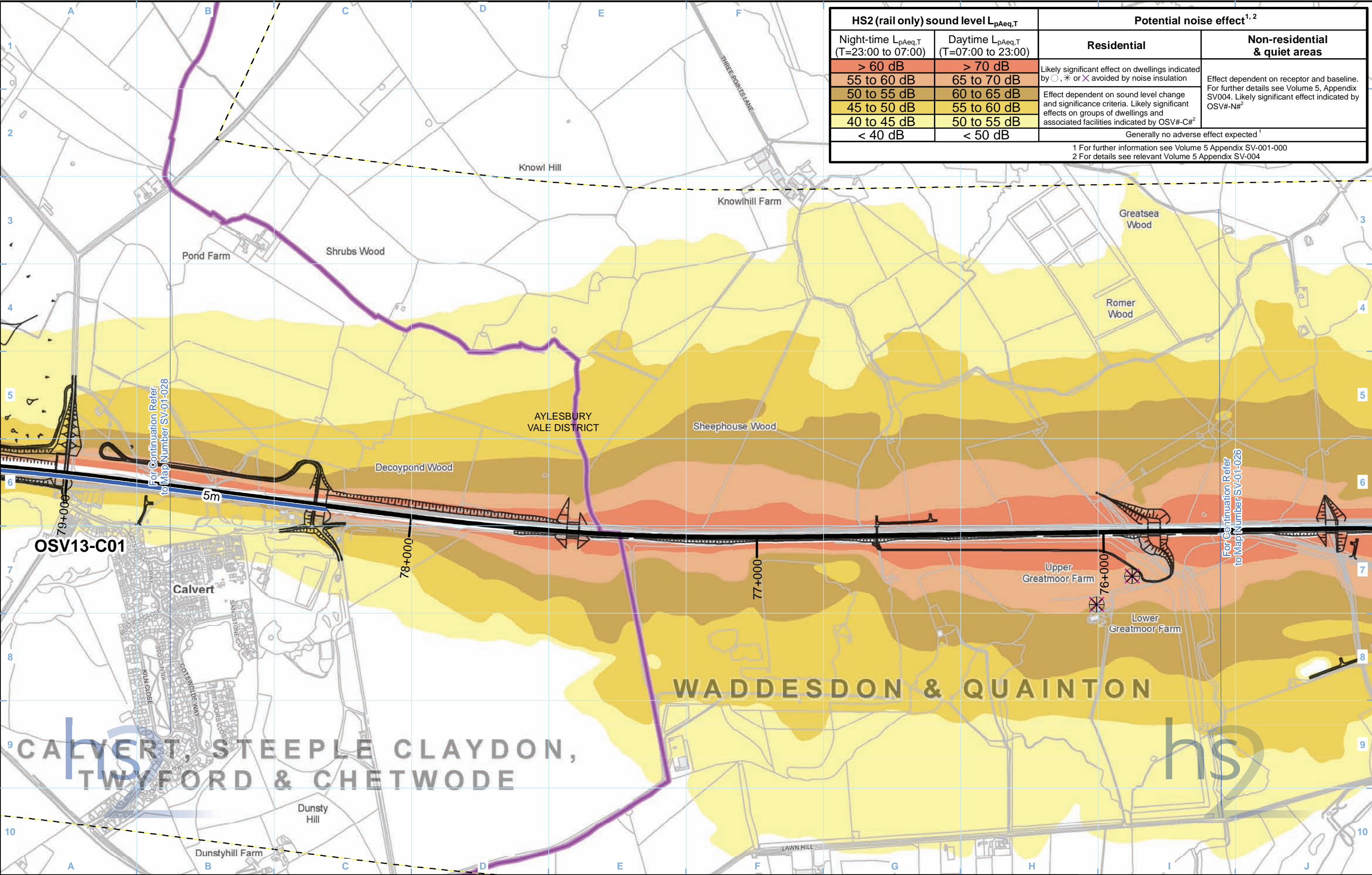
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Scale at A3: 1:10,000

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Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

Other environmental e.g. landscaping

Engineering e.g. cuttings
- Airborne sound study area

Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>
- \* Labelled with total barrier height above rail level

Map Number

SV-01-027a

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA12:

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300

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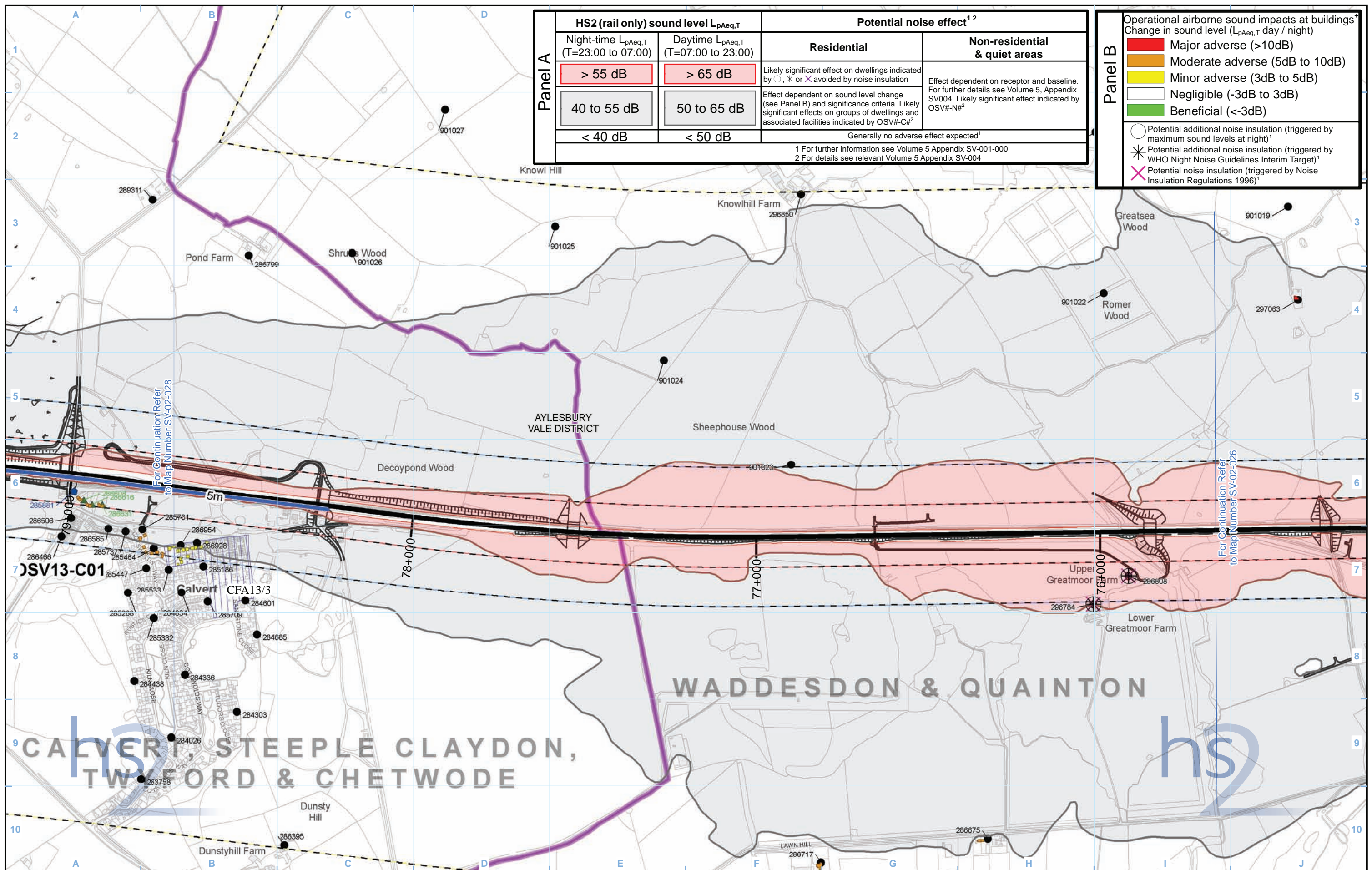
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Doc Number: C250-ARP-EV-MAP-000-003570

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number: SV-02-027a

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA12: Waddesdon & Quainton

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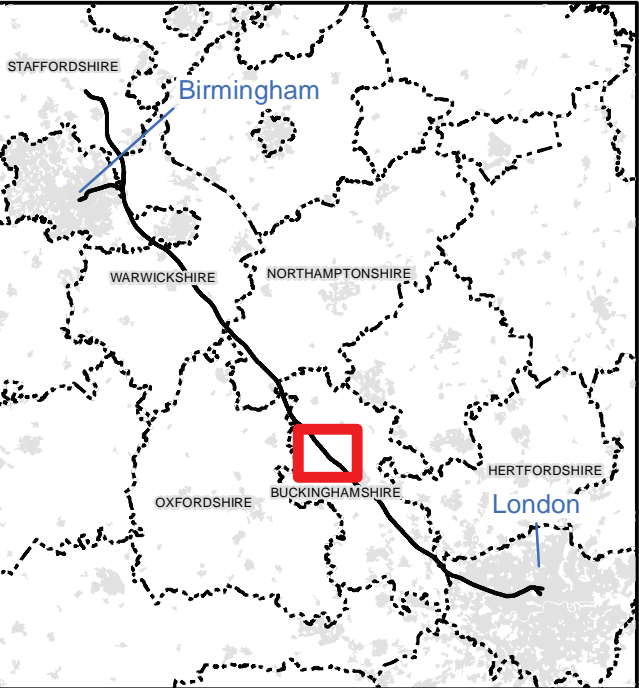
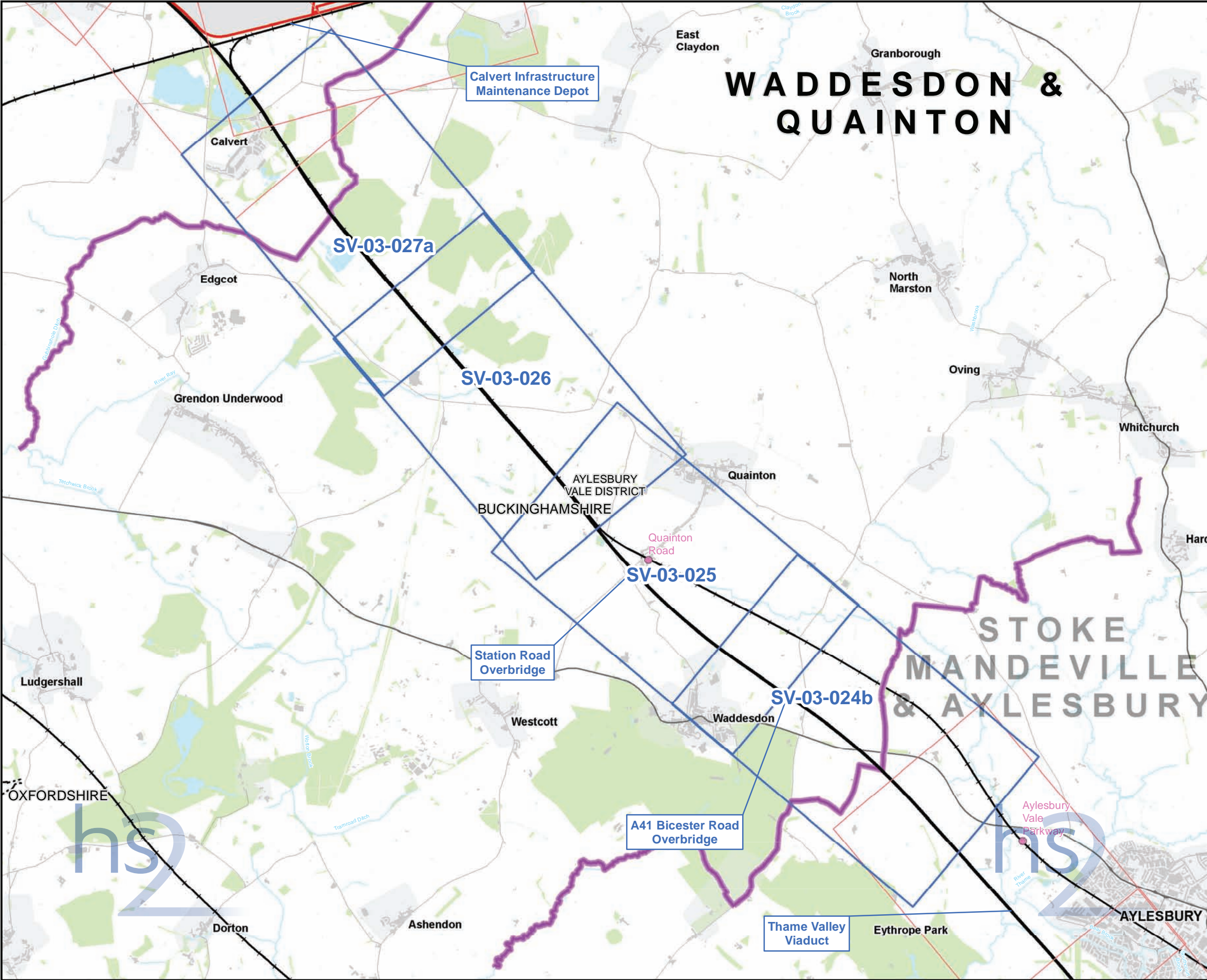
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Scale at A3: 1:10,000

Date: 31/10/13





**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA12

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA12:  
Waddesdon & Quainton

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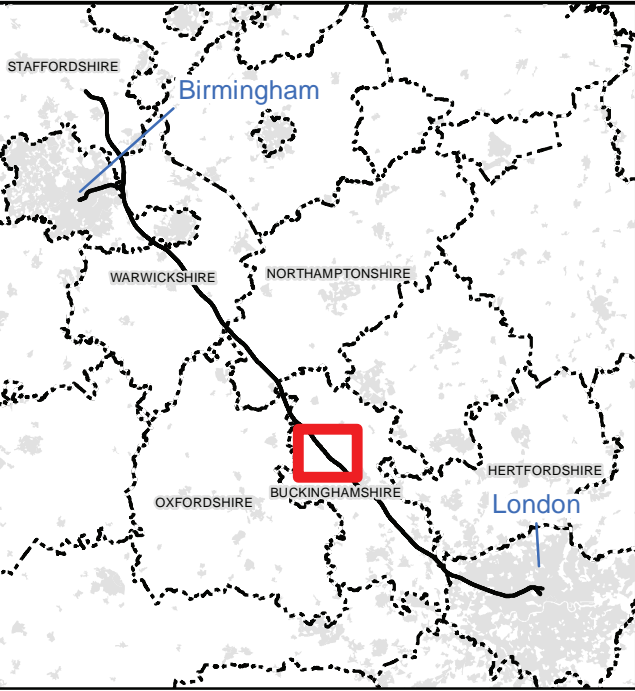
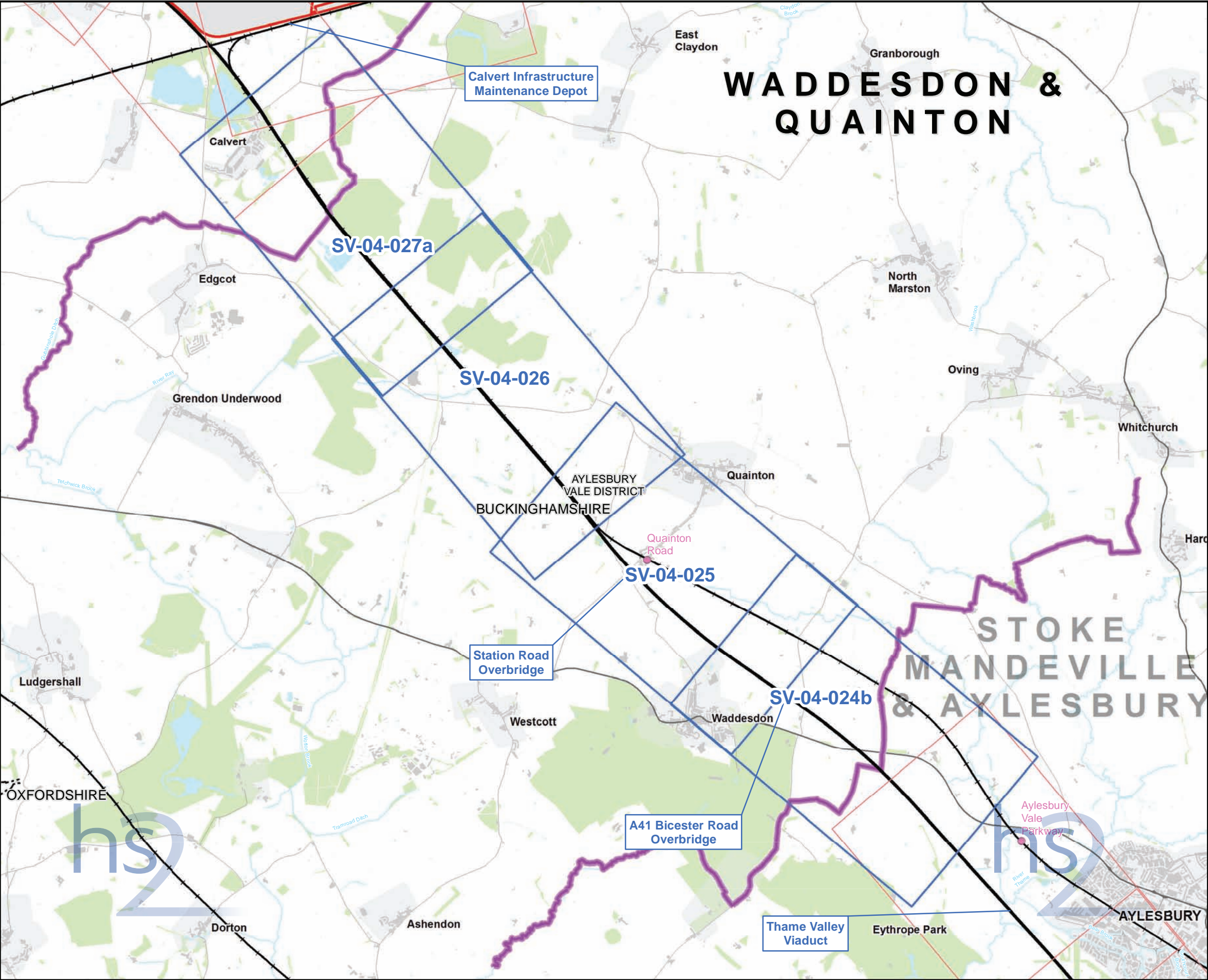
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Date: 29/10/13





**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA12

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA12:  
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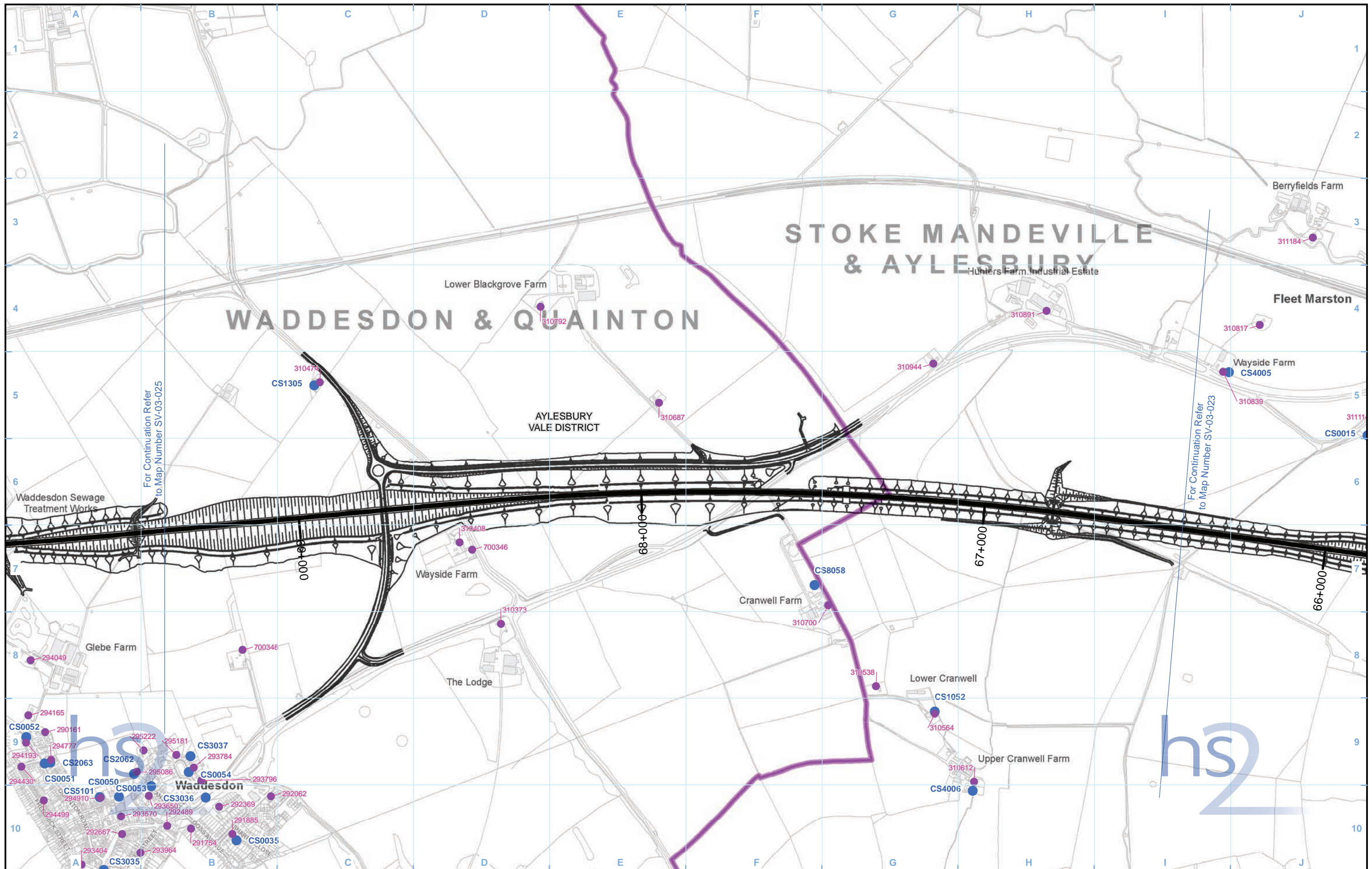
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Doc Number: C250-ARP-EV-MAP-000-004146--P04.00

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-024b
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA12: Waddesdon & Quainton	




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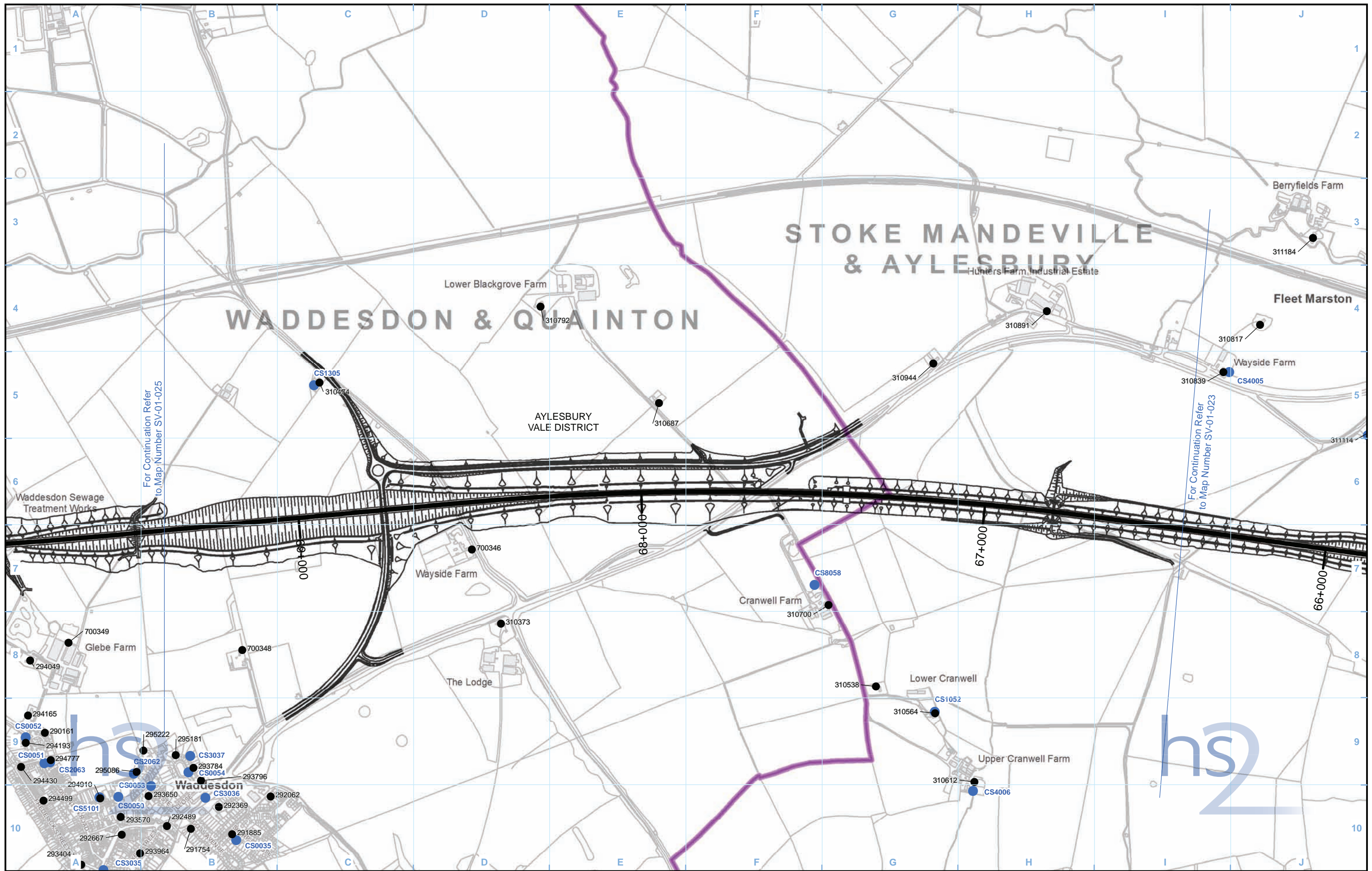
Scale at A3: 1:10,000



Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

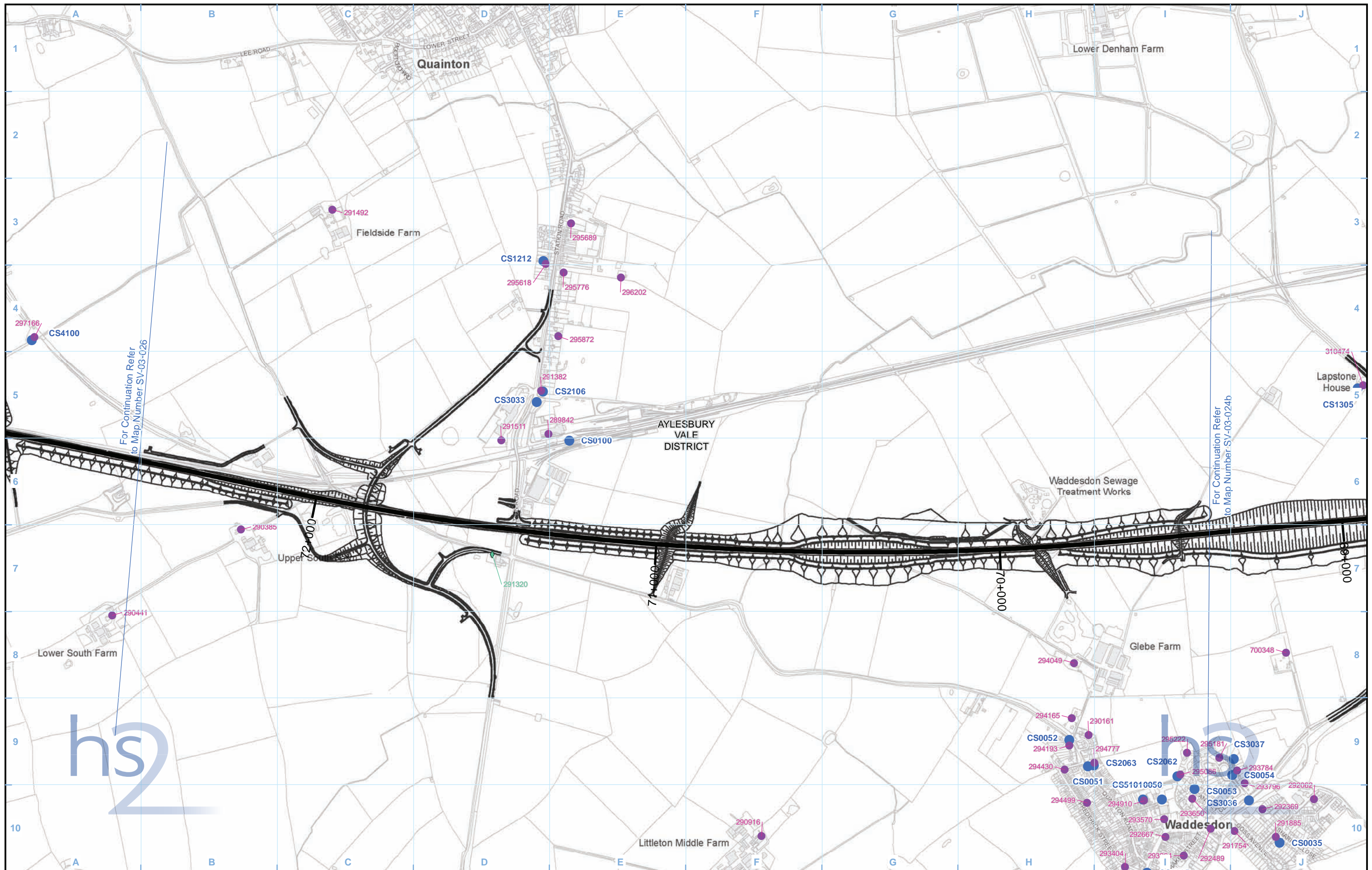
labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code

Map Number	SV-04-024b
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA12: Waddesdon & Quainton	

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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

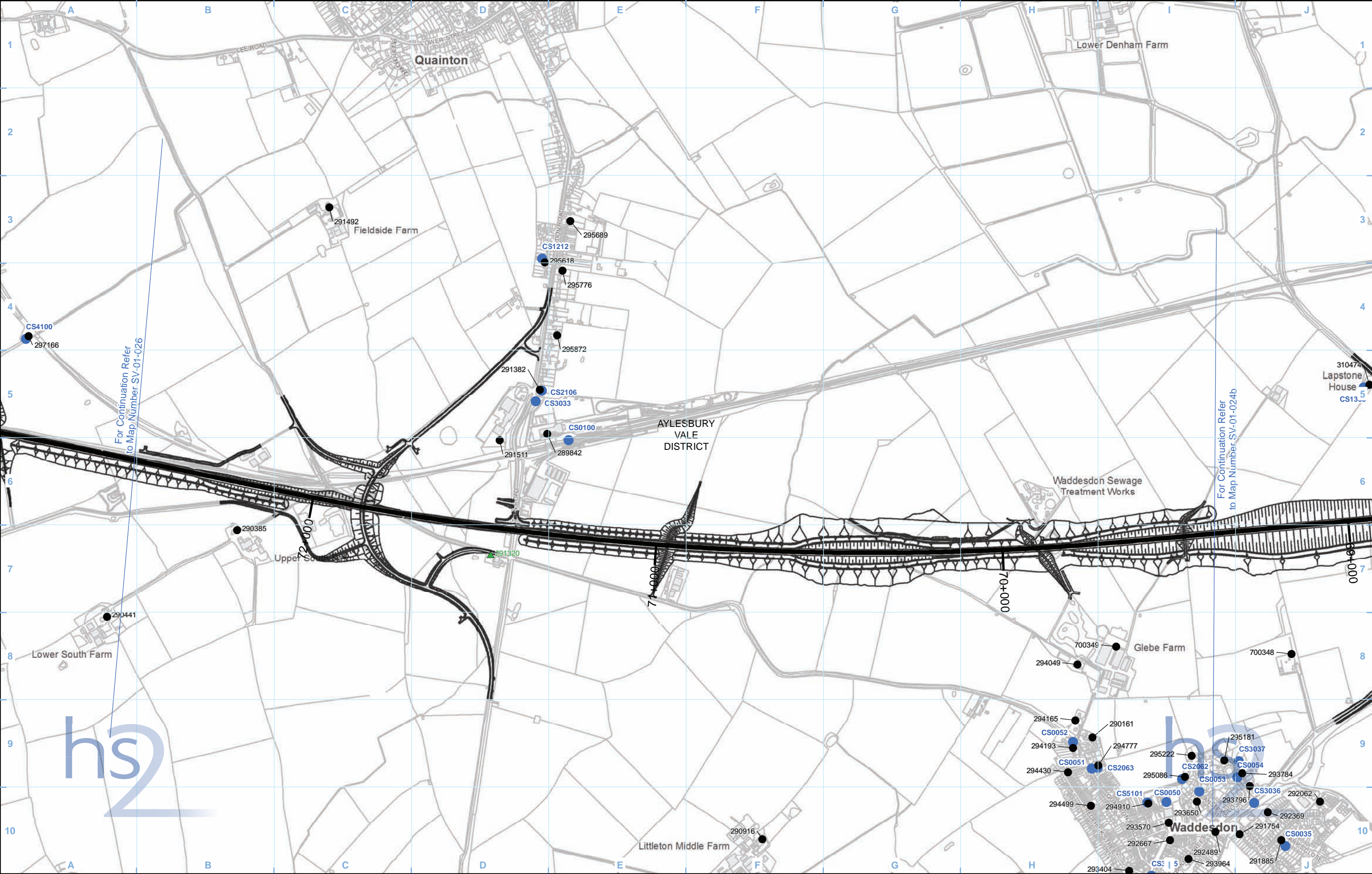
labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number	SV-03-025
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA12: Waddesdon & Quainton	

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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code

Map Number	SV-04-025
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA12: Waddesdon & Quainton	

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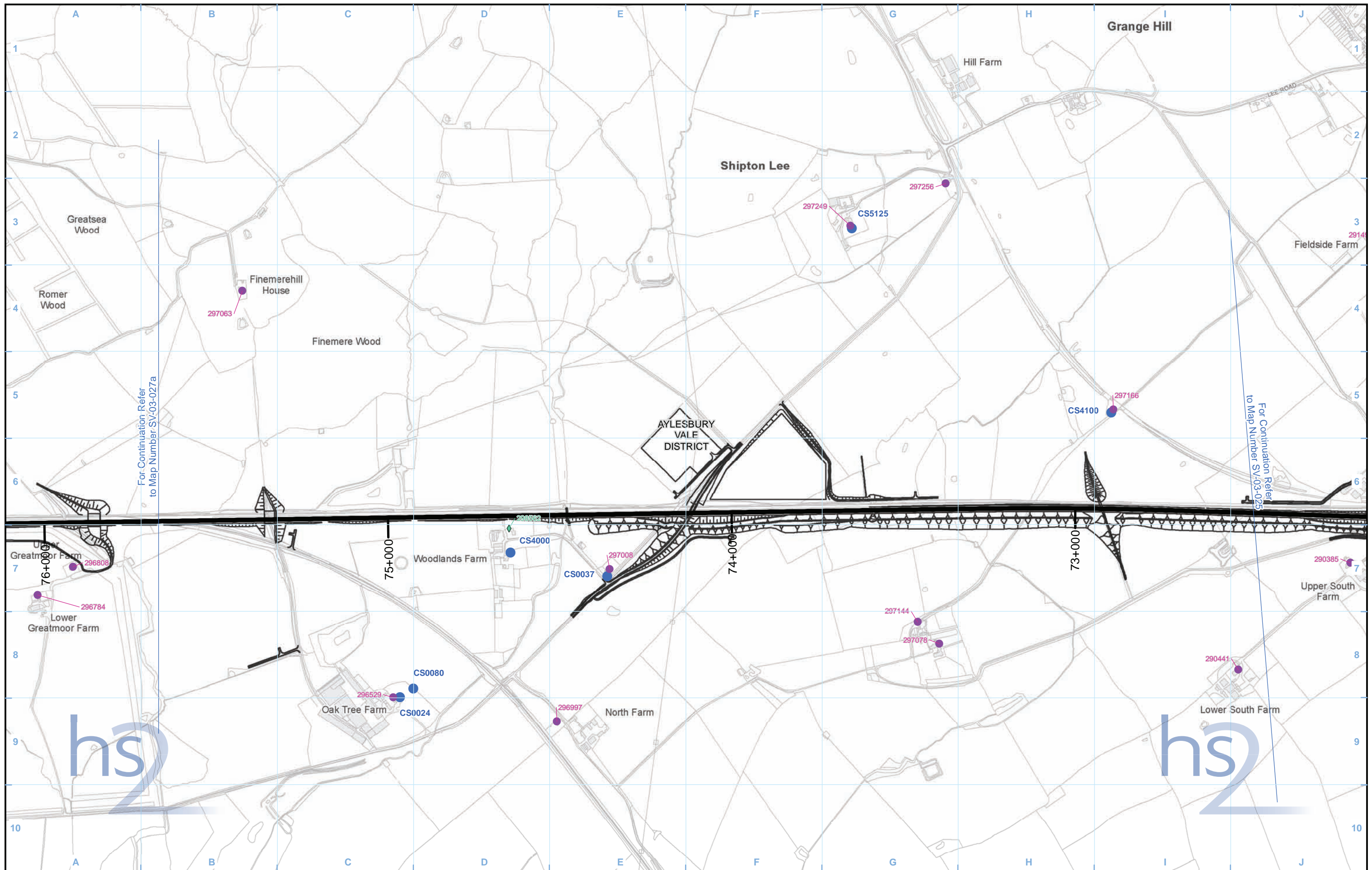
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Doc Number: C250-ARP-EV-MAP-000-003880

Date: 29/10/13

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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-026
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA12:	Waddesdon & Quainton




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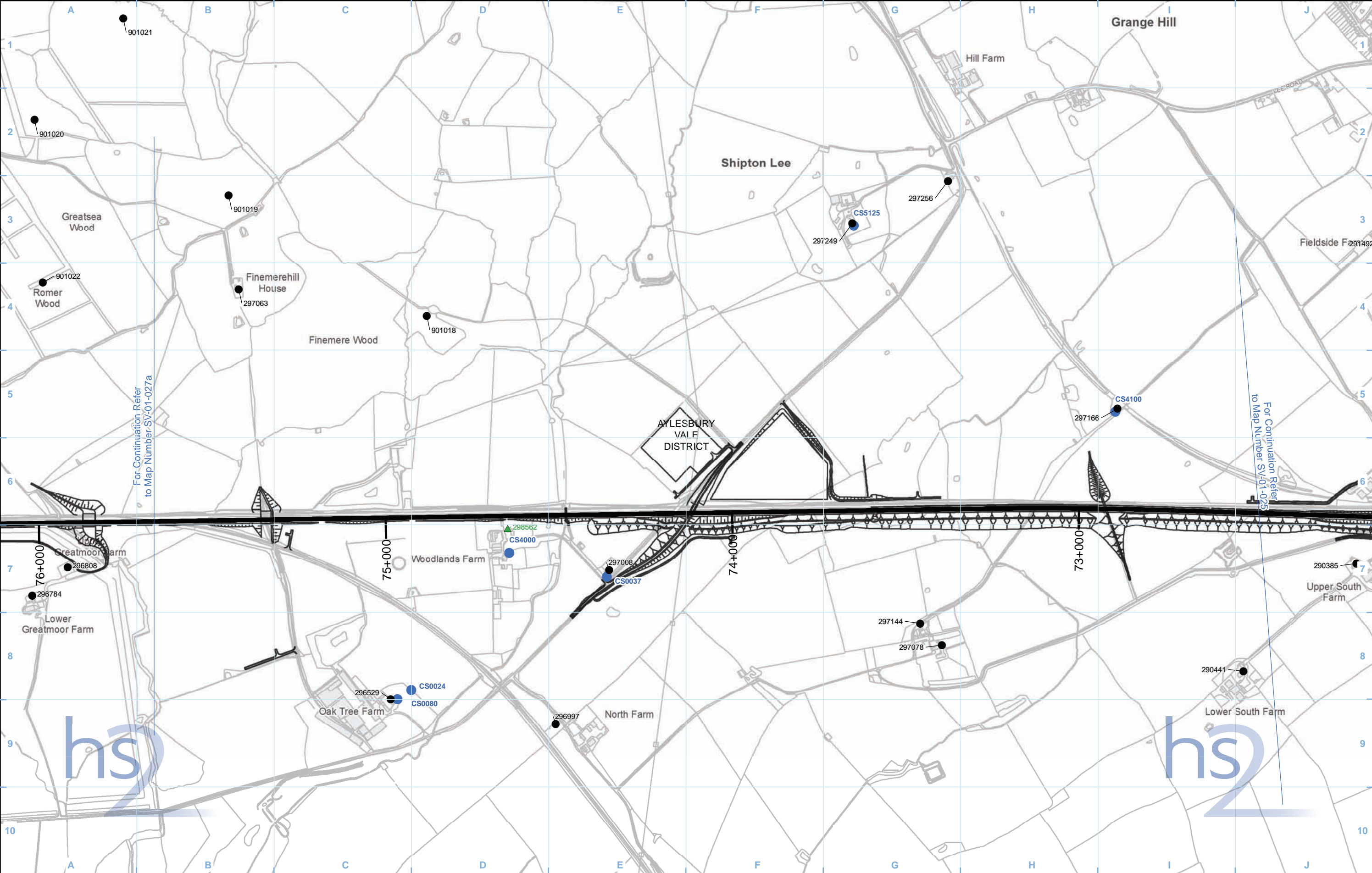
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0 100 200 300 400 Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code


Map Number	SV-04-026
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA12: Waddesdon & Quainton	




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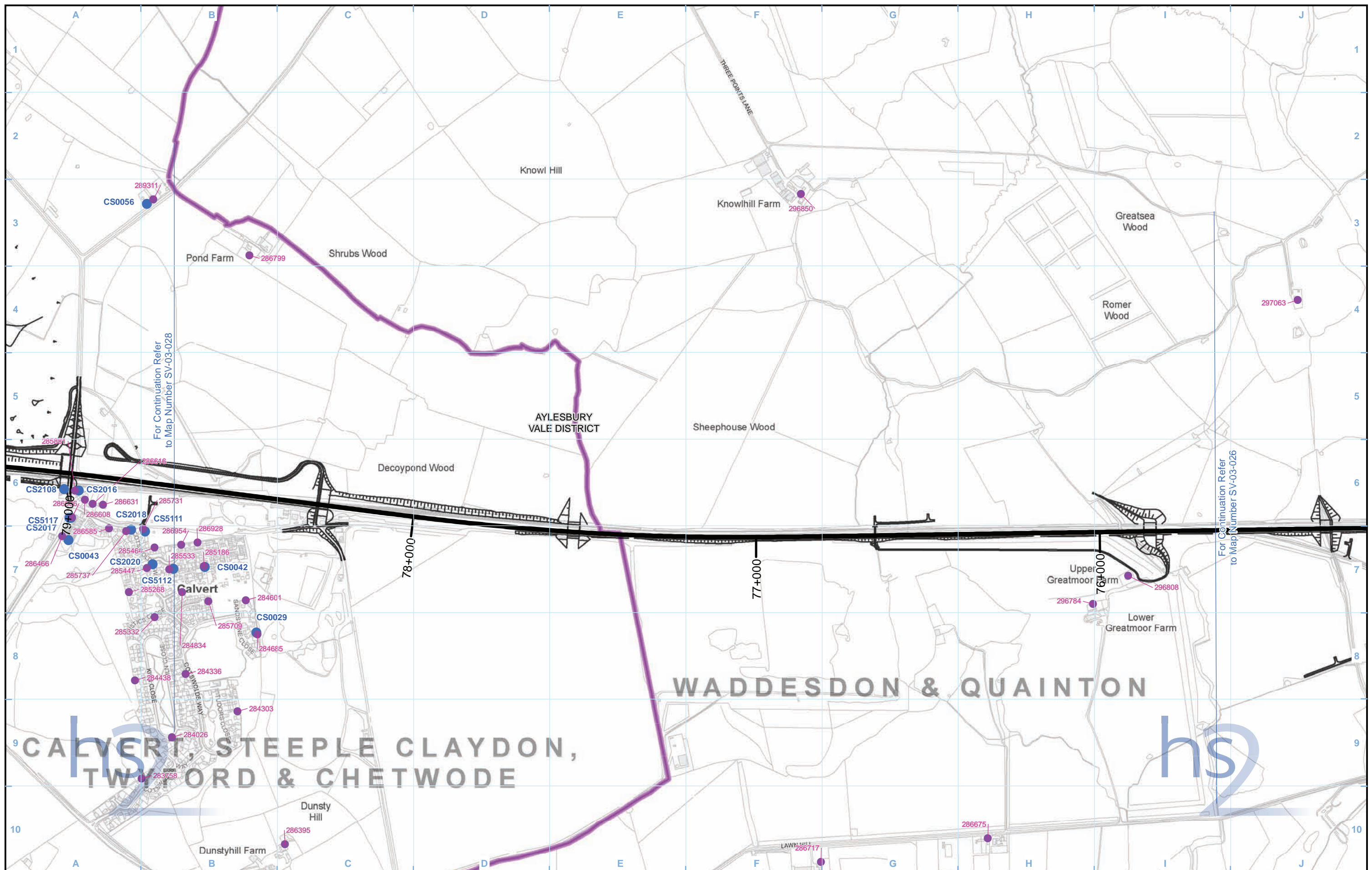
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0 100 200 300 400 Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number	SV-03-027a
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA12: Waddesdon & Quainton	

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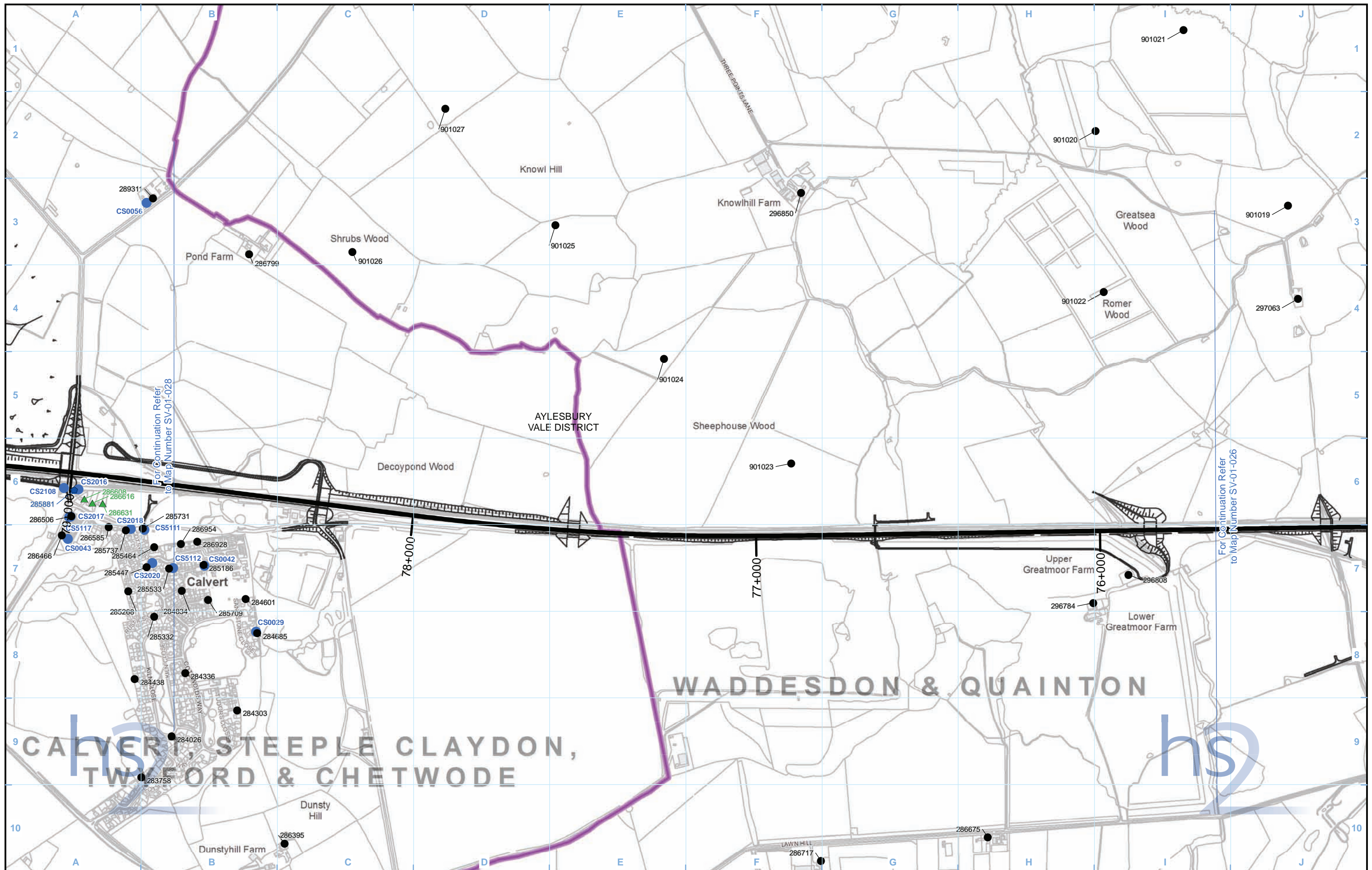
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Scale at A3: 1:10,000

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)


Map Number	SV-04-027a
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA12:	Waddesdon & Quainton




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Doc Number: C250-ARP-EV-MAP-000-003882



Scale at A3: 1:10,000



Metres

Date: 29/10/13



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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA13 | Calvert, Steeple Claydon, Twyford and Chetwode

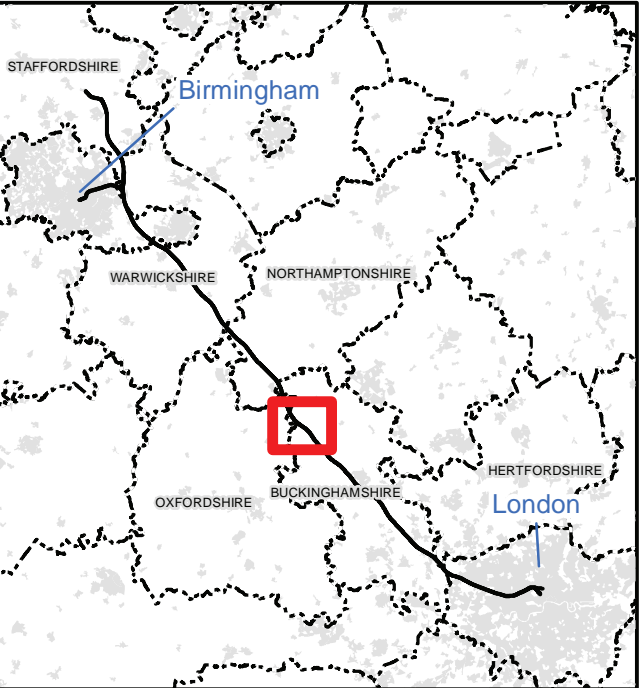
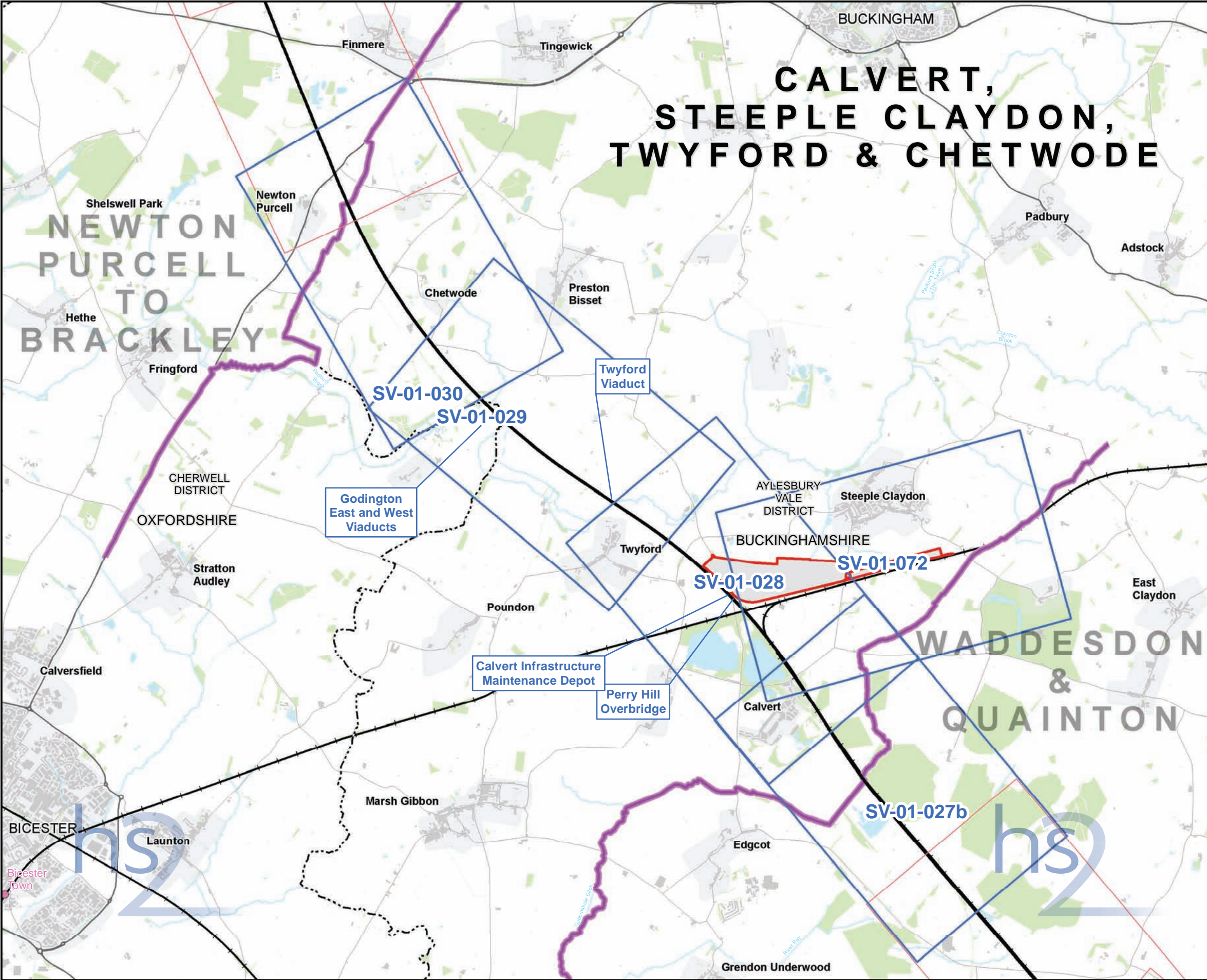
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





**Map Series Information:**

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-01-INDEX-CFA13

Map Name

Index Map of:  
Operational Sound Contour Maps and  
Likely Significant Effects

Community Forum Area CFA13:

Calvert, Steeple Claydon, Twyford & Chetwode

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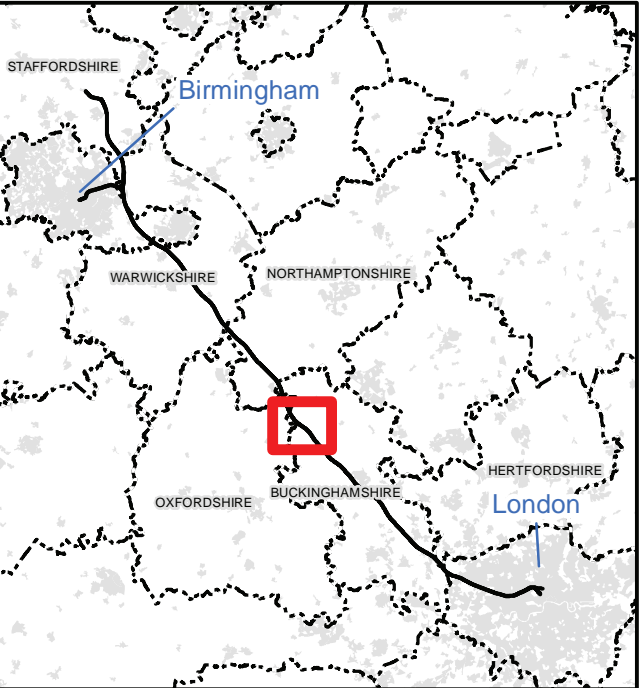
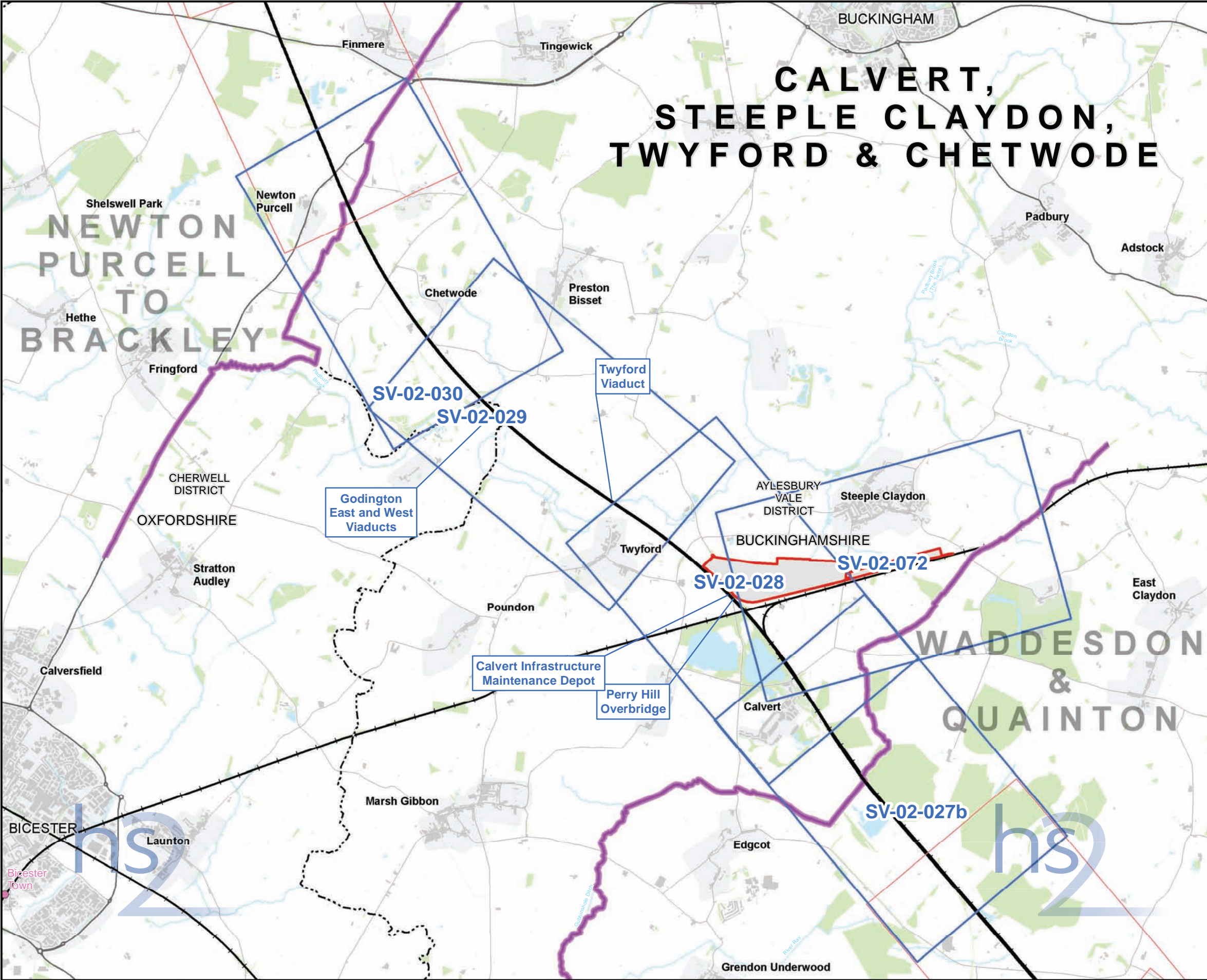
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Date: 29/10/13





**Map Series Information:**

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-02-INDEX-CFA13

Map Name

Index Map of:  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA13:

Calvert, Steeple Claydon, Twyford & Chetwode

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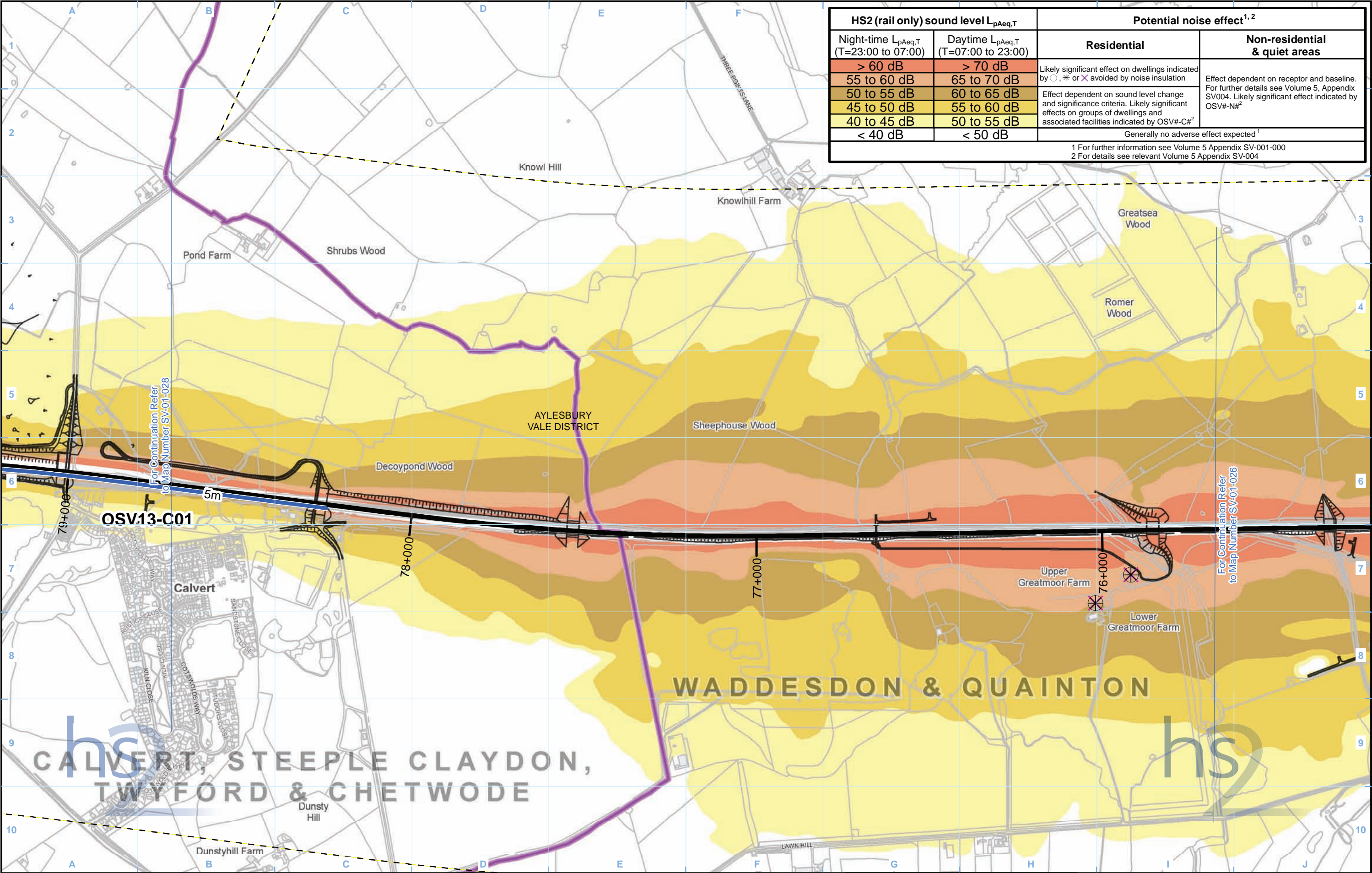
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Doc Number: C250-ARP-EV-MAP-000-004095--P04.00

Scale at A3: 1:50,000

Date: 29/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-027b

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA13:

Calvert, Steeple Claydon, Twyford & Chetwode

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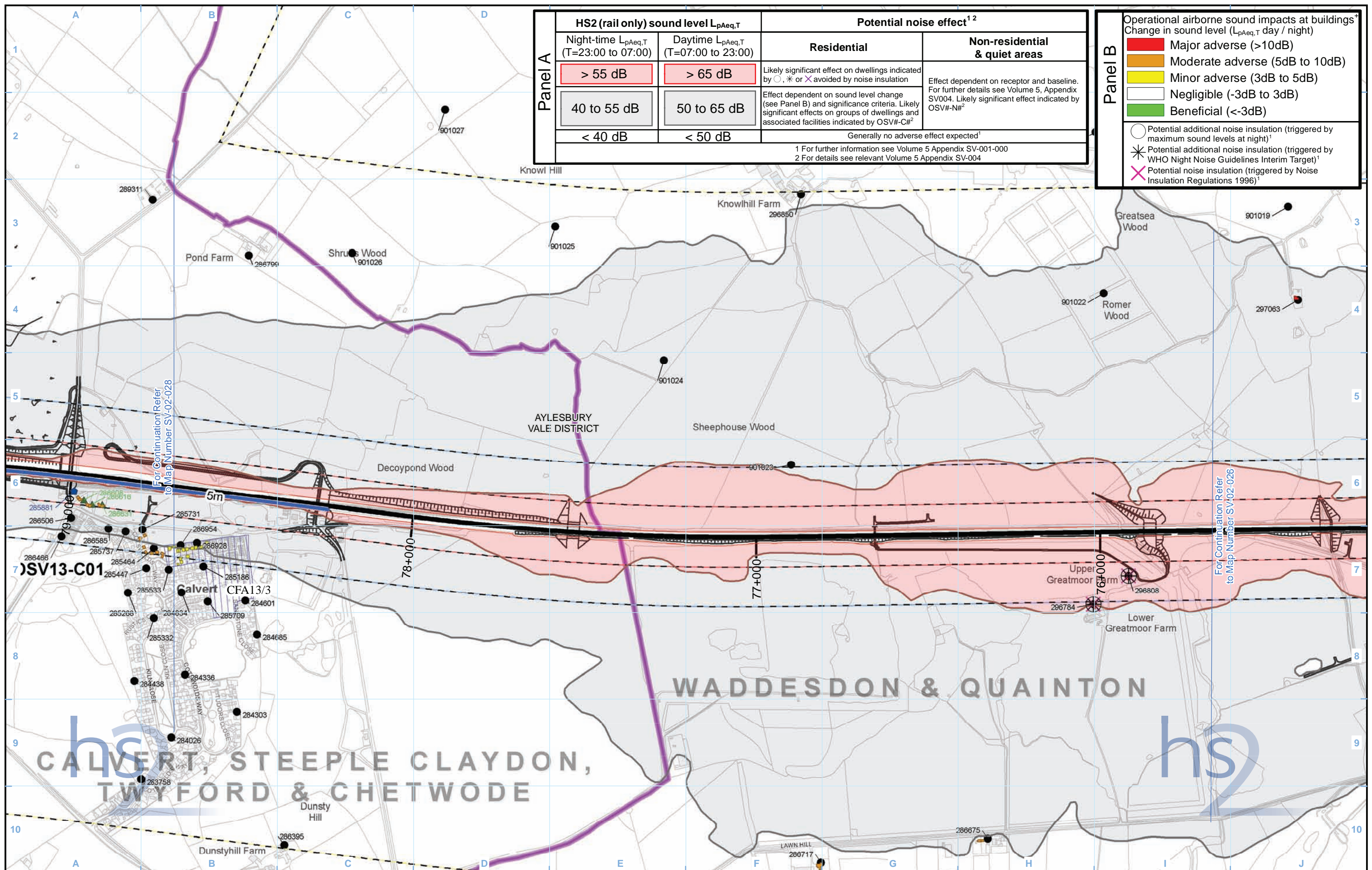
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Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
  - Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

**Map Number**  
SV-02-027b

**Map Name**  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

**Community Forum Area CFA13:**  
Calvert, Steeple Claydon, Twyford & Chetwode

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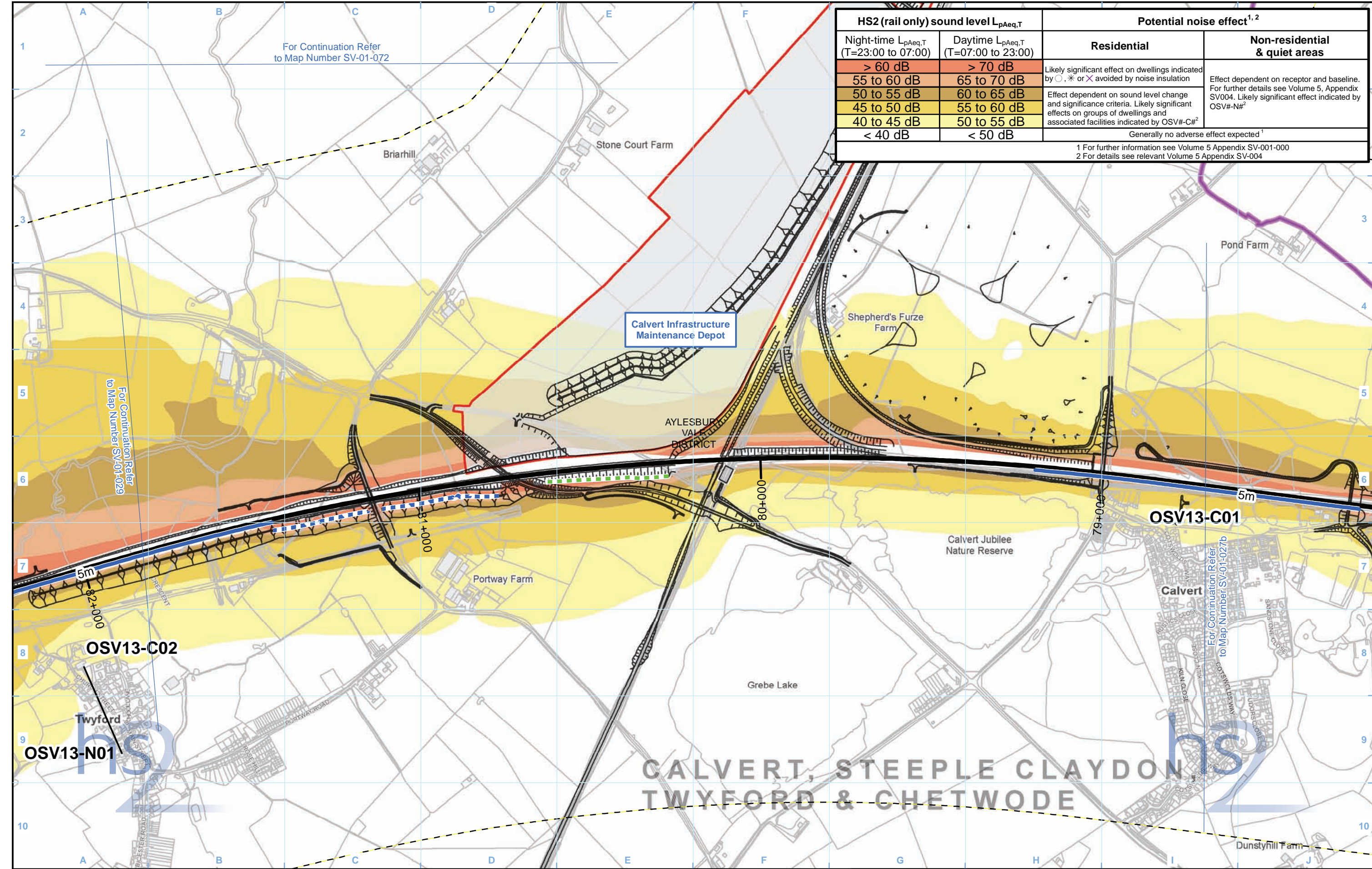


For Continuation Refer  
to Map Number SV-01-072

For Continuation Refer  
to Map Number SV-01-029

For Continuation Refer  
to Map Number SV-01-027b

HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			



**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

**Legend - Sound related features**

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number: SV-01-028

Map Name: Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA13:  
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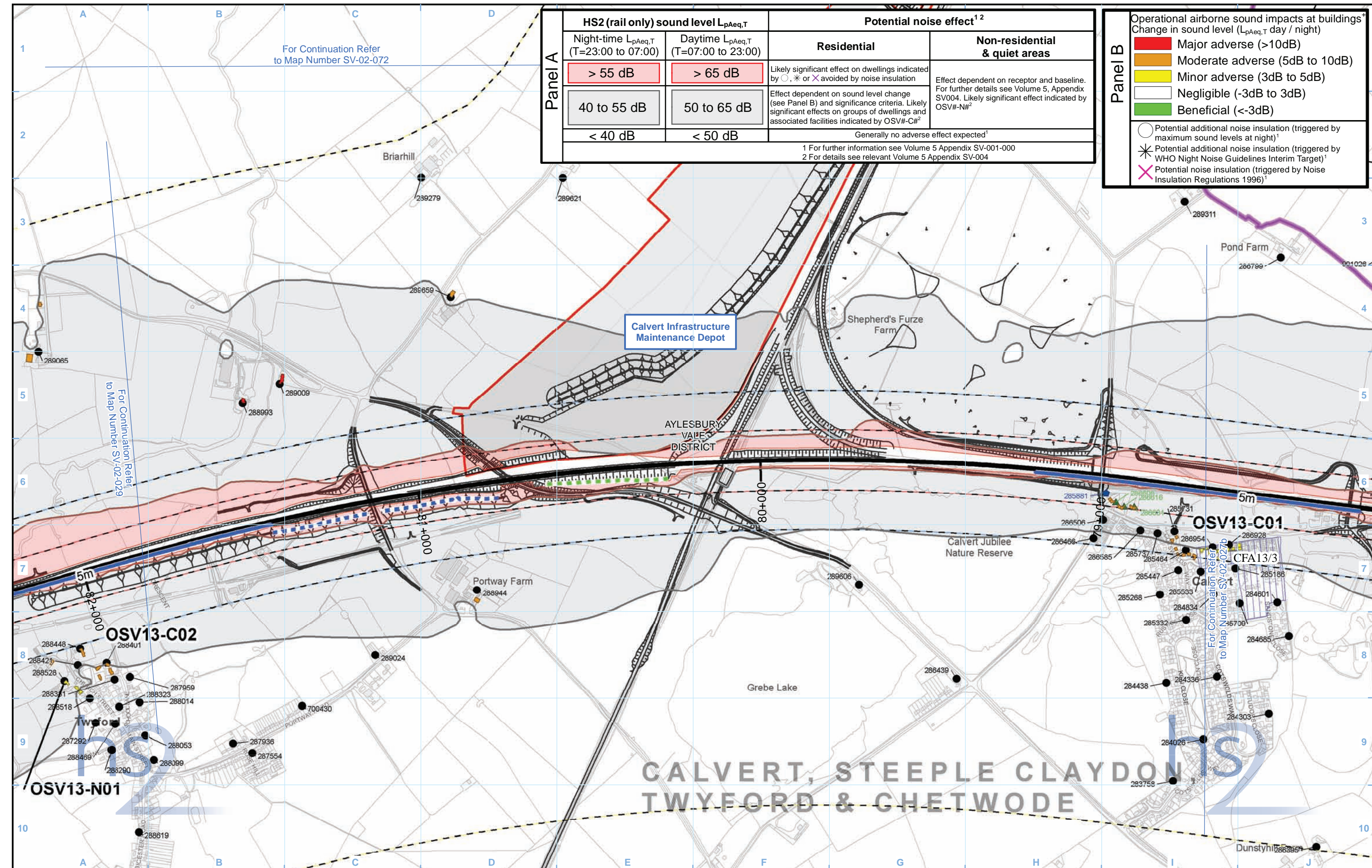
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For Continuation Refer  
to Map Number SV-02-072

Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings* Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		



#### Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

- Engineering earthworks:
- Embankment
  - Cutting
- Non engineering earthworks:
- Embankment
  - Cutting

- \* Residential buildings only  
\* Labelled with total barrier height above rail level

#### Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number SV-02-028

Map Name  
Operational Noise and Vibration Impacts  
and Likely Significant Effects (with  
Assessment Locations)

Community Forum Area CFA13:  
Calvert, Steeple Claydon, Twyford & Chetwode



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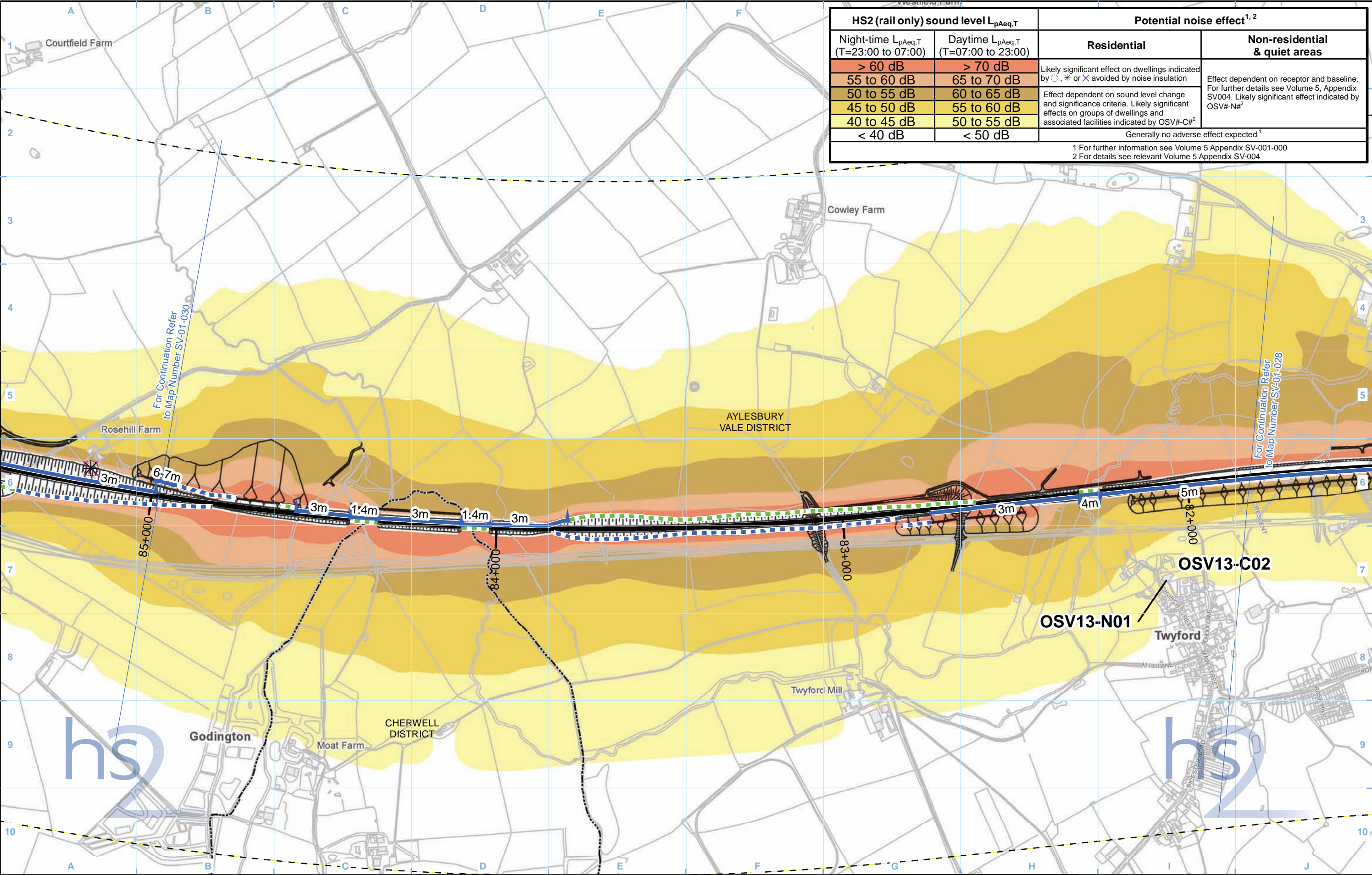


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Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number SV-01-029

Map Name  
Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA13:  
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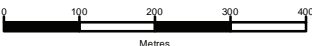
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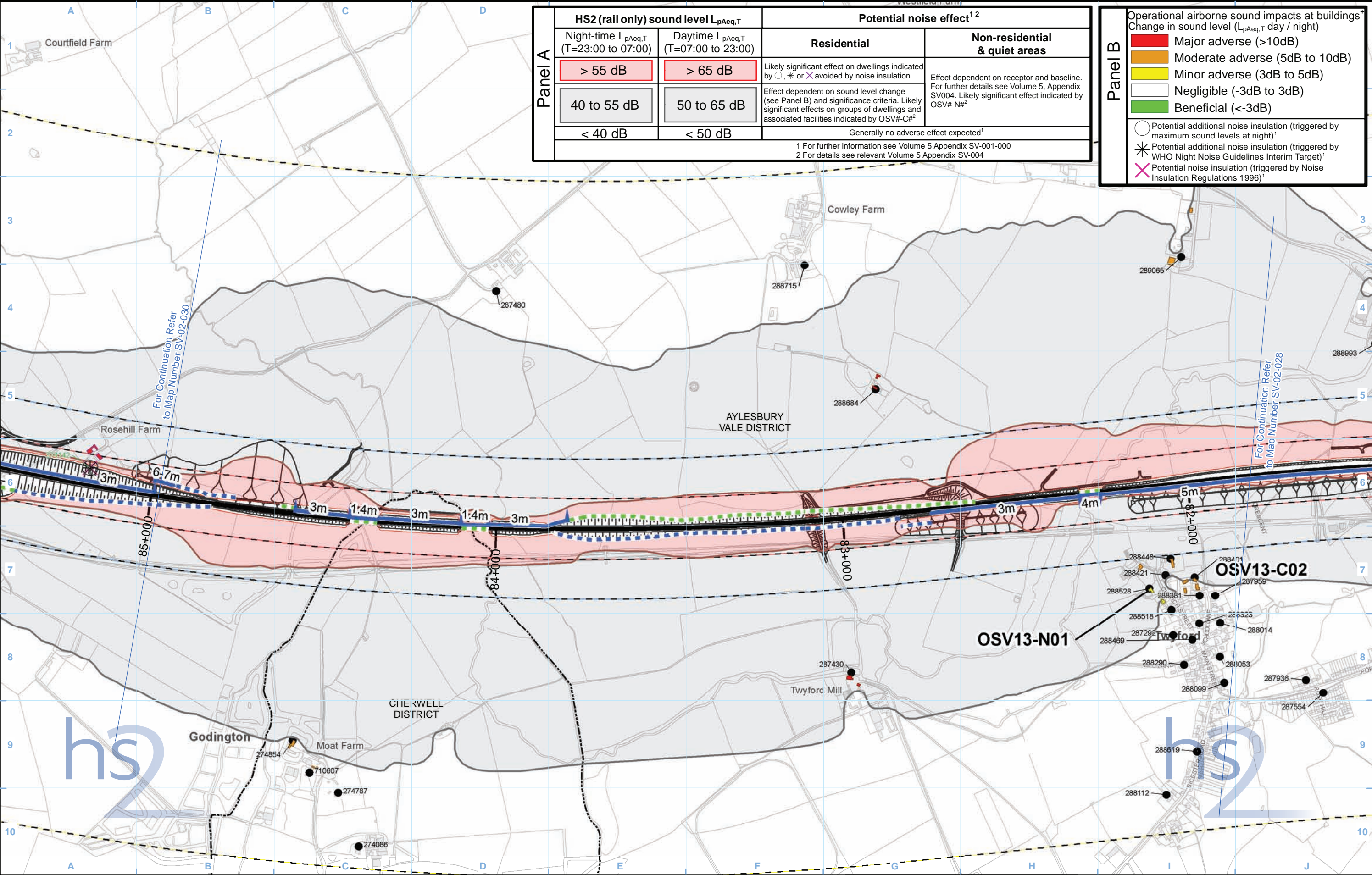


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Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

- Engineering earthworks: Non engineering earthworks:
- Embankment
  - Cutting
  - Embankment
  - Cutting
- \* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
  - Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number SV-02-029

Map Name Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode

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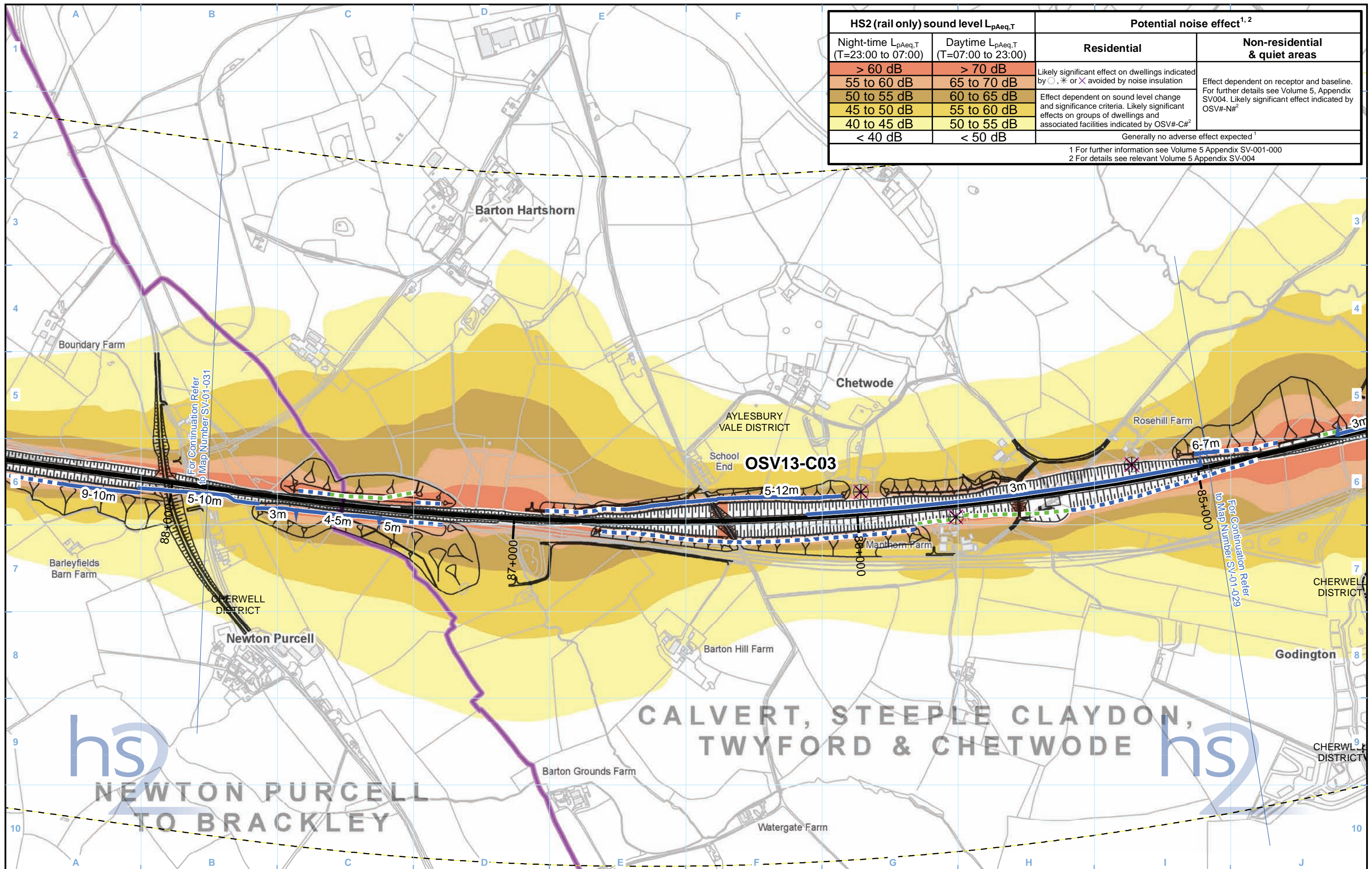
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HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

**Map Number** SV-01-030

**Map Name** Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA13:  
Calvert, Steeple Claydon, Twyford & Chetwode

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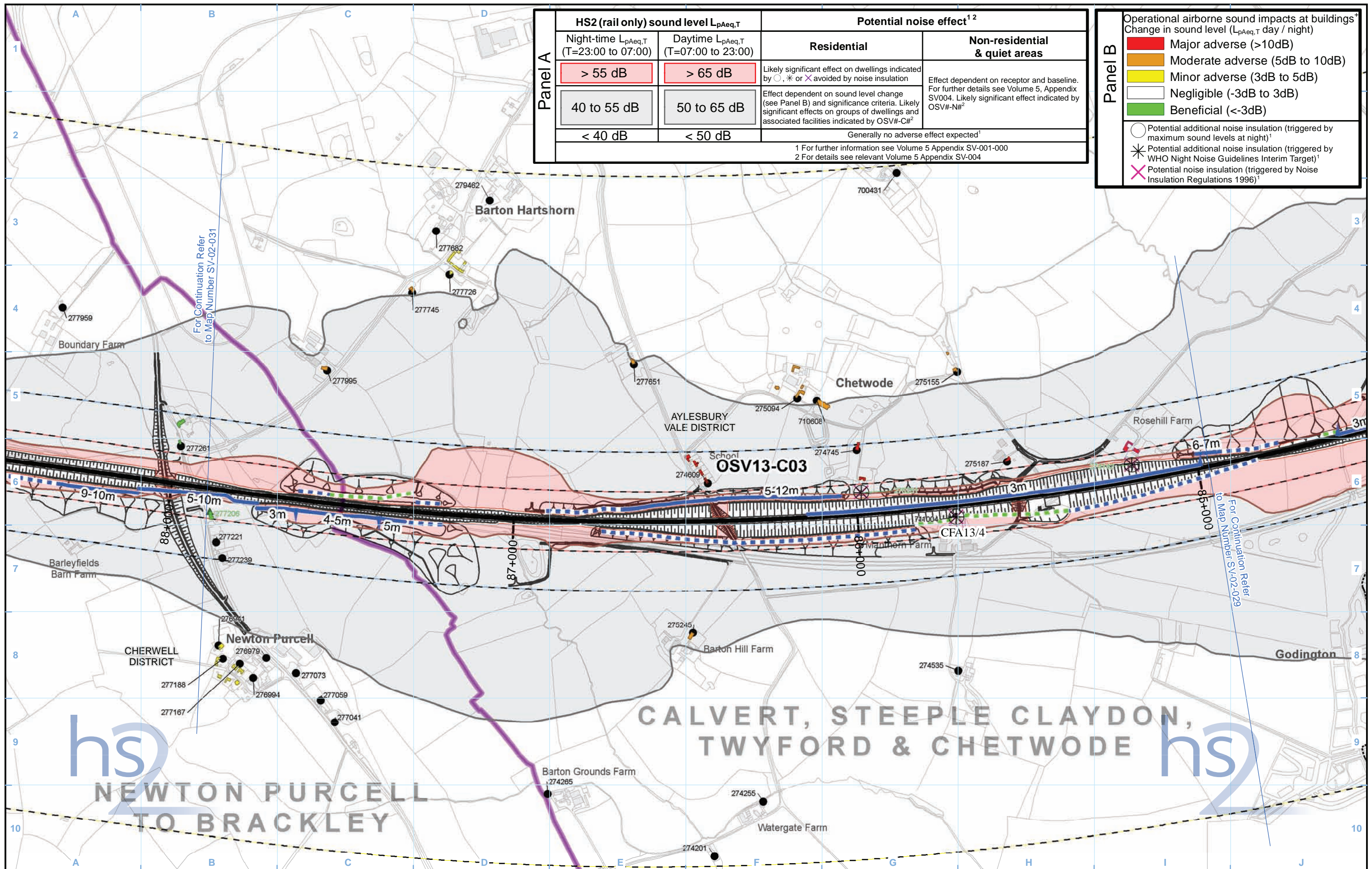
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**Date:** 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>  
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>  
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number: SV-02-030

Map Name: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode

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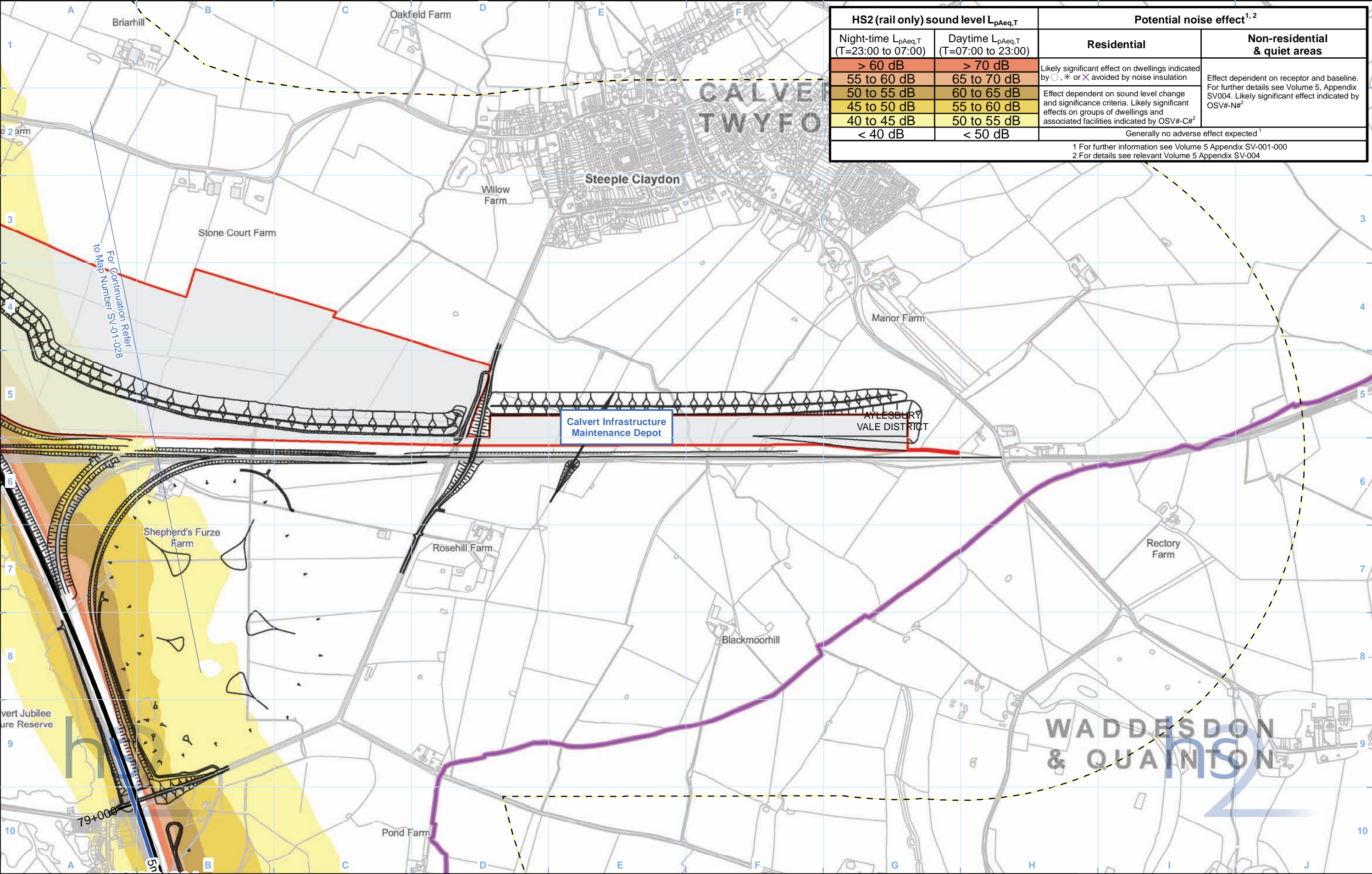
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Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

Envisaged mitigation to avoid / reduce significant noise effects:

- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-072

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA13:  
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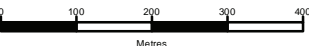


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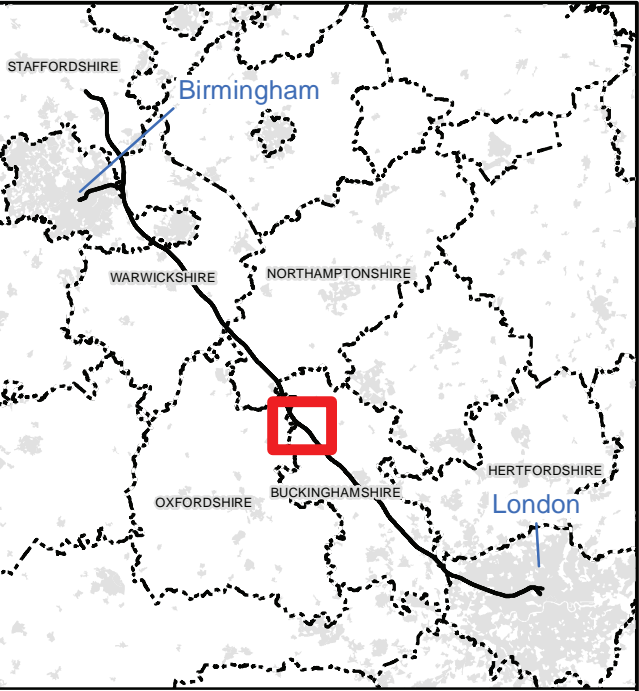
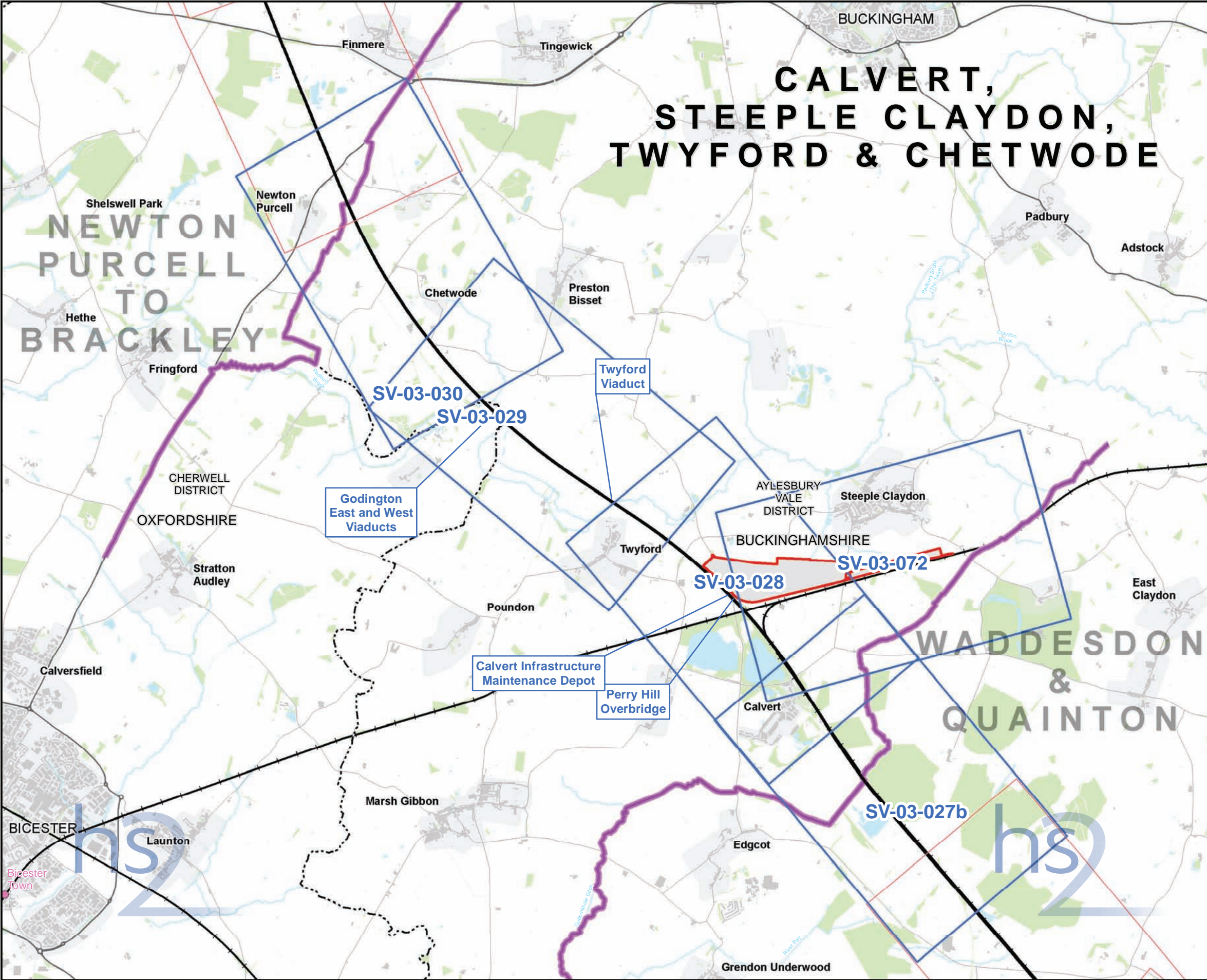


Date: 29/10/13









**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-03-INDEX-CFA13

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA13:

Calvert, Steeple Claydon, Twyford & Chetwode

hs2

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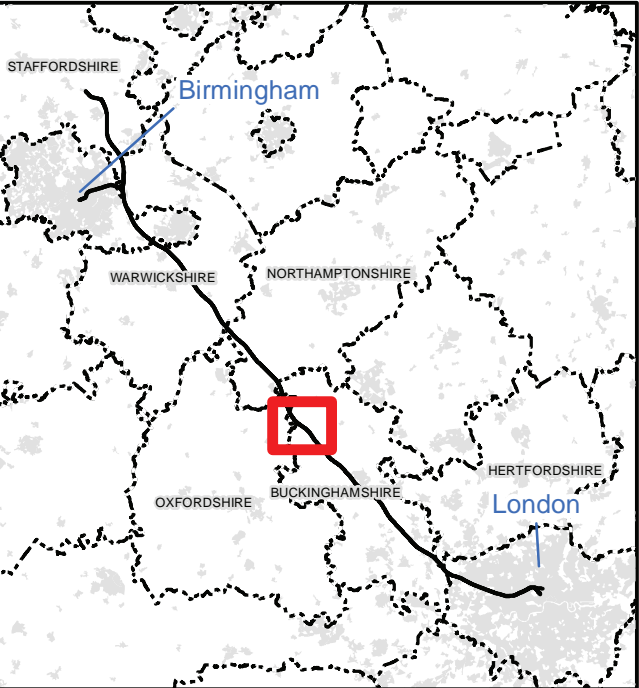
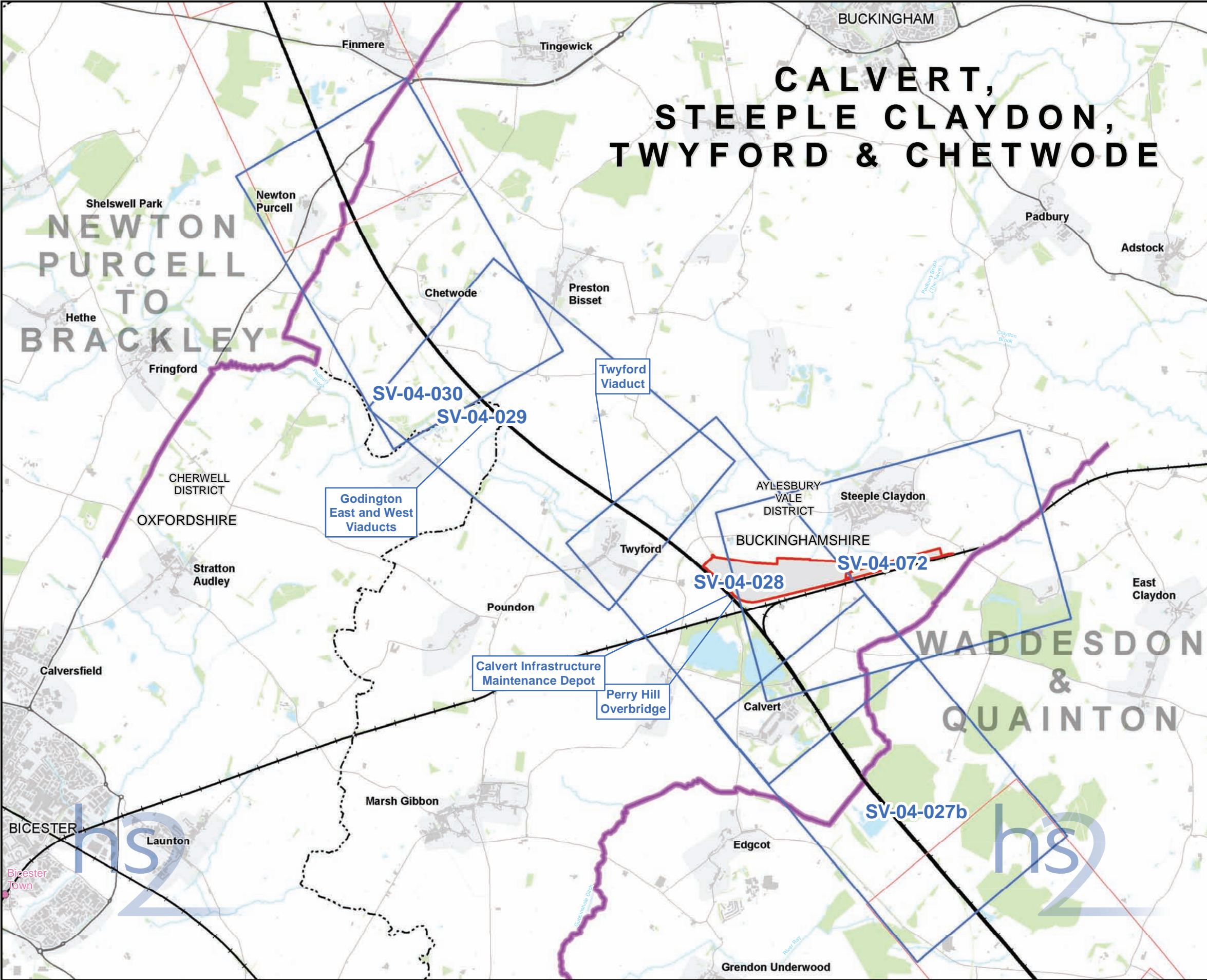
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Doc Number: C250-ARP-EV-MAP-000-004121-P06.00

Date: 29/10/13





**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA13

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA13:

Calvert, Steeple Claydon, Twyford & Chetwode

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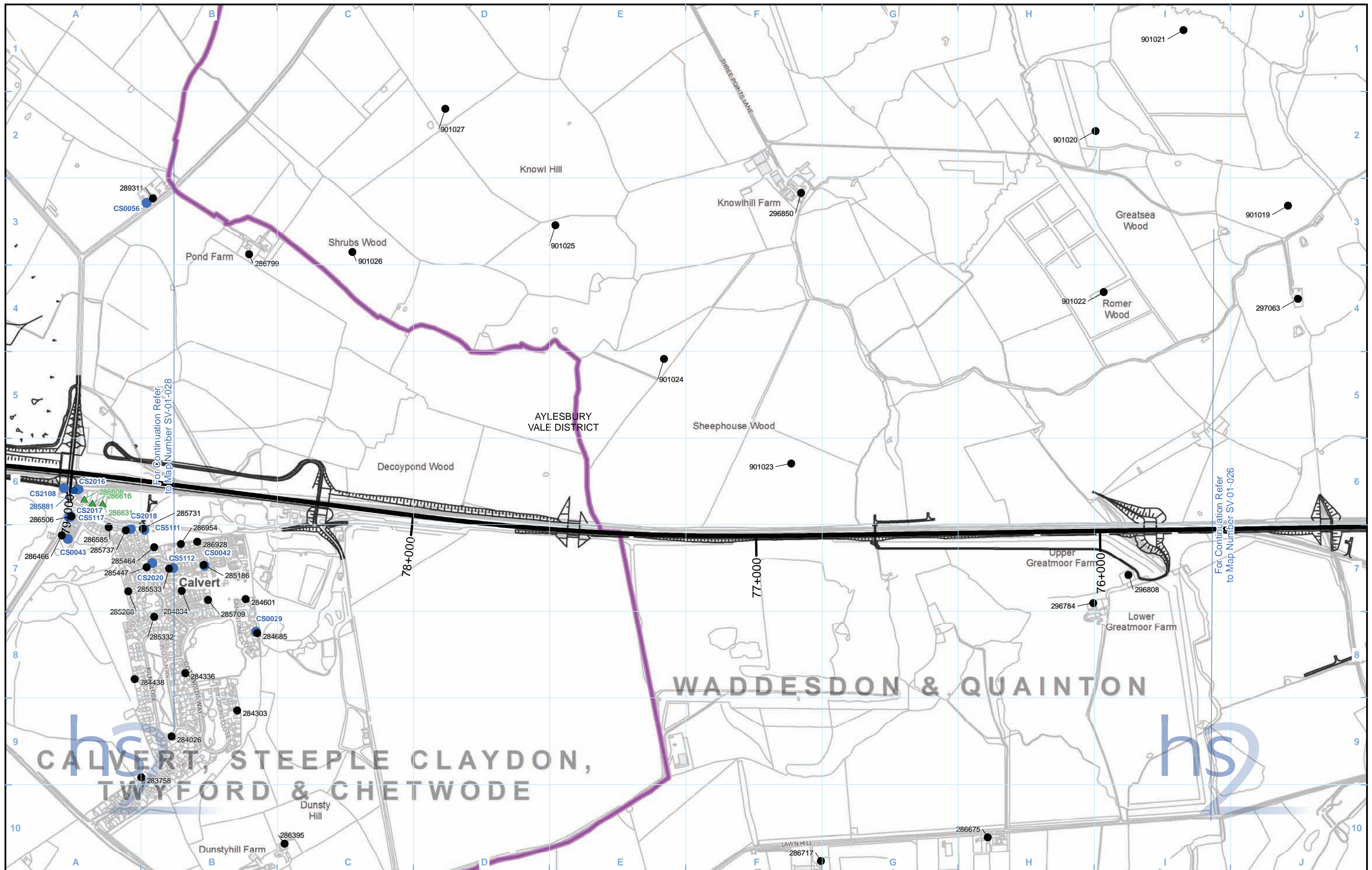
Doc Number: C250-ARP-EV-MAP-000-004147--P04.00

Date: 29/10/13









Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)


Map Number	SV-04-027b
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode	




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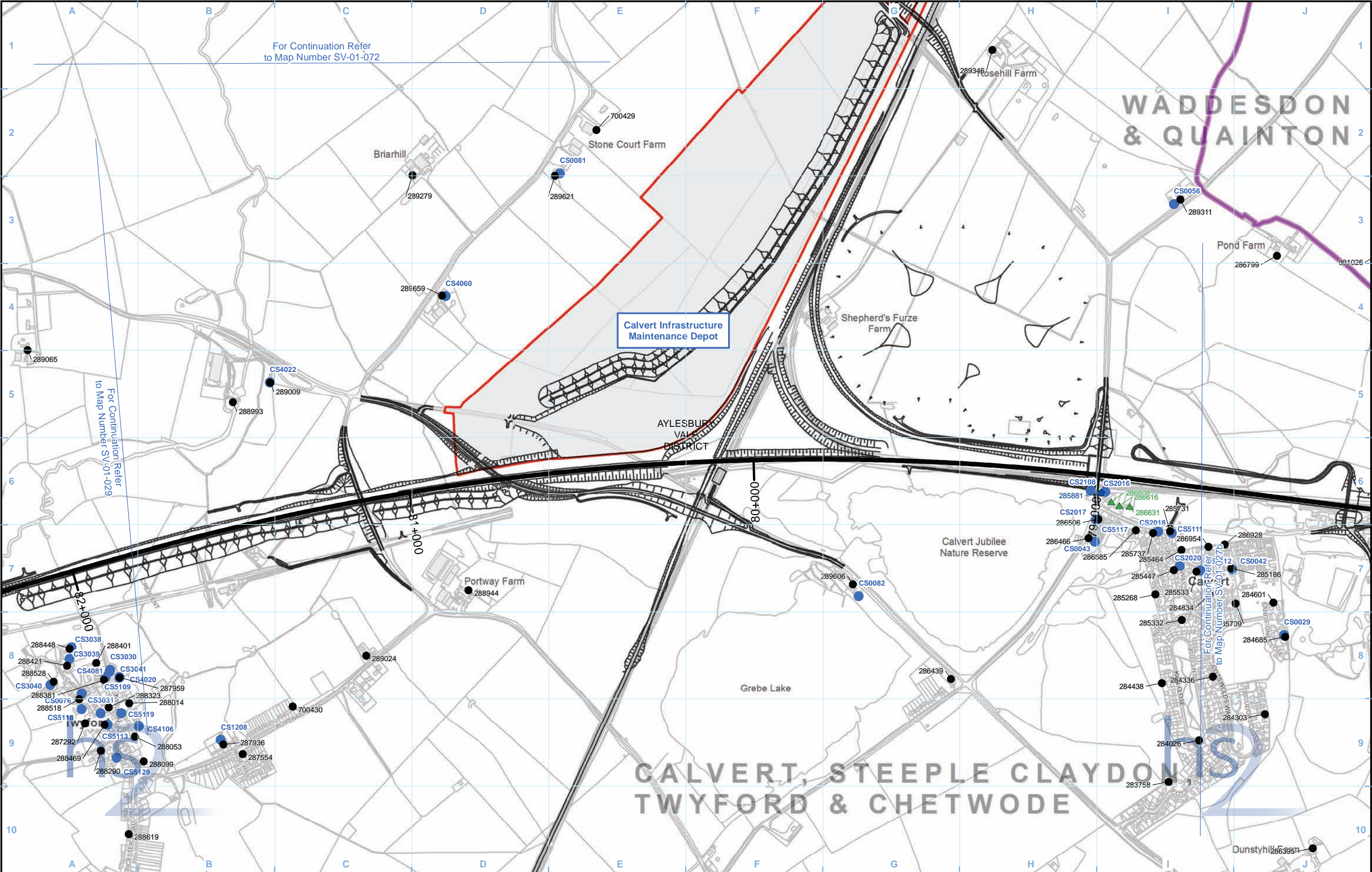




For Continuation Refer  
to Map Number SV-01-072

For Continuation Refer  
to Map Number SV-01-029

For Continuation Refer  
to Map Number SV-01-027b



Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

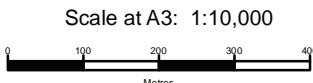
(labelled with Measurement Location reference code)

Map Number	SV-04-028
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode	



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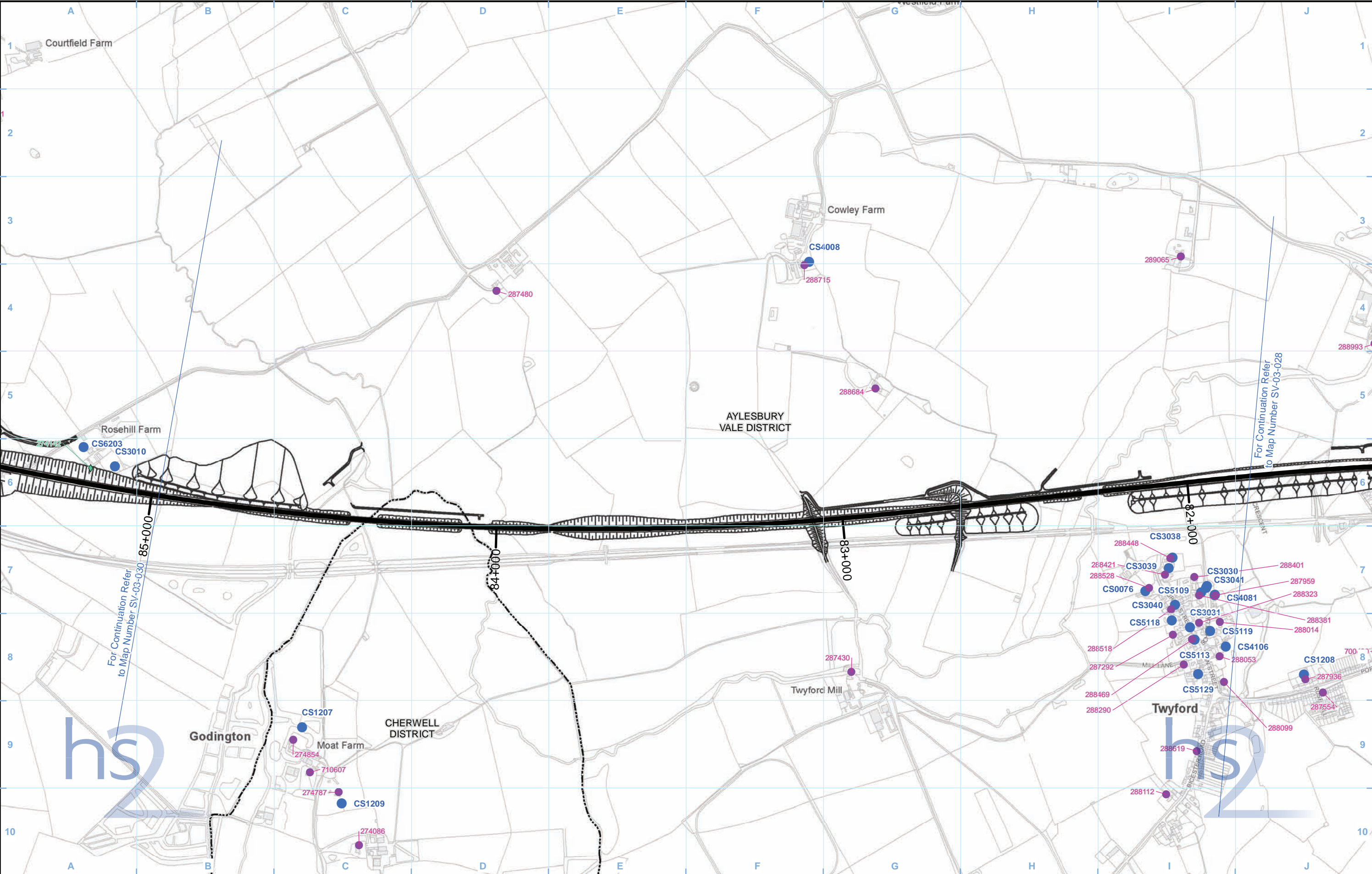
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Date: 29/10/13





Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

Legend - Sound related features

Construction airborne sound assessment location

Construction vibration assessment locations

Construction airborne sound and vibration assessment location

Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

labelled with Measurement Location reference code

Map Number

SV-03-029

Map Name

Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA13:  
Calvert, Steeple Claydon, Twyford & Chetwode

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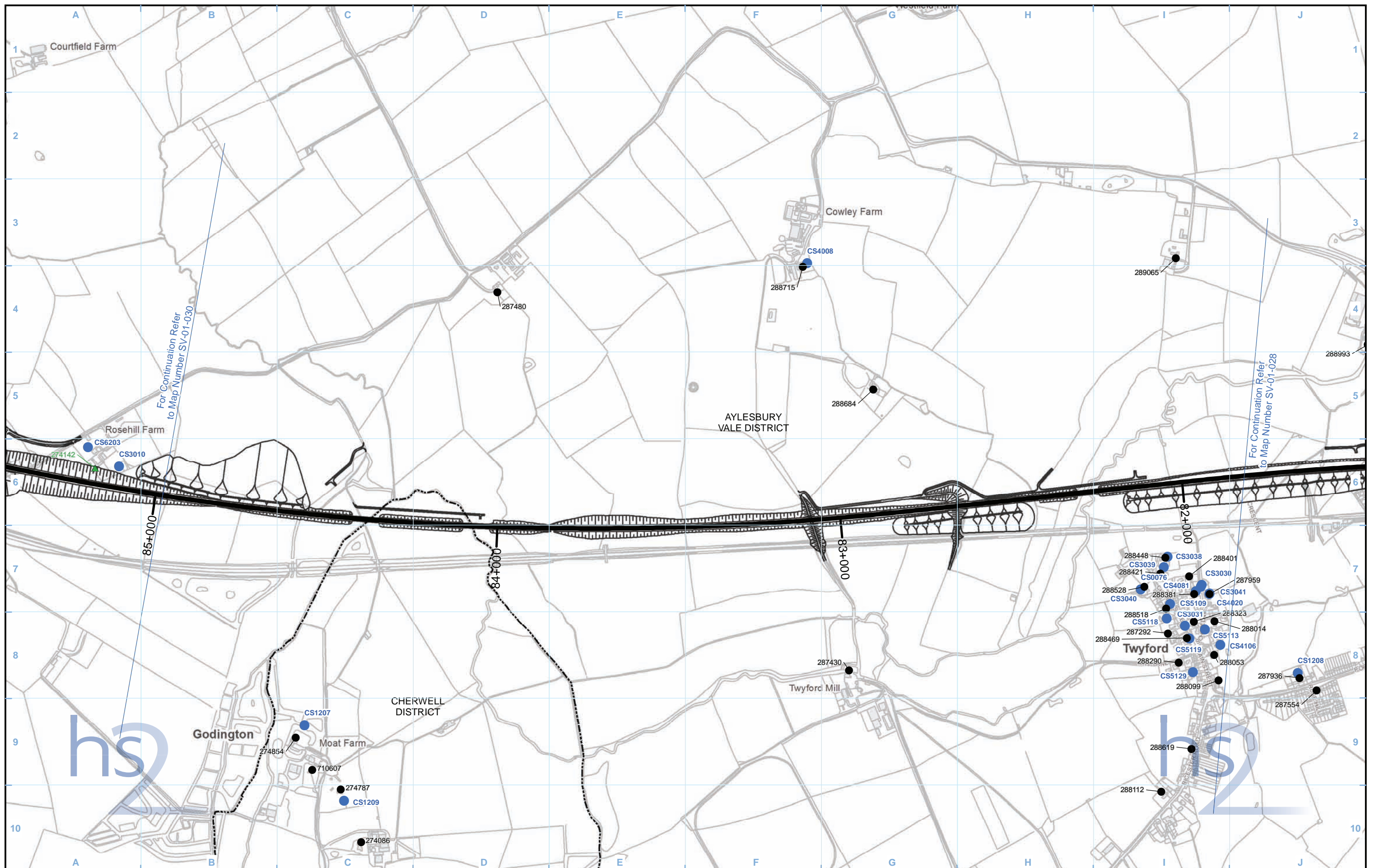
Metres

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Doc Number: C250-ARP-EV-MAP-000-003784

Date: 29/10/13







Legend - General features

-  Route in bored tunnel
-  Route in green tunnel
-  Route on surface
-  Depot, station, headhouse or portal building
-  Community forum boundary
-  District/Borough boundary
-  County boundary

Engineering earthworks:

-  Embankment  
 Cutting

Non engineering earthworks:

- 
- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- ▲ Airborne sound and vibration assessment location
- ⬢ Ground-borne sound and/or vibration assessment location
- ◆ Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number

SV-04-029

Map Name
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## Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA13:  
Calvert, Steeple Claydon, Twyford & Chetwode



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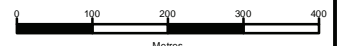


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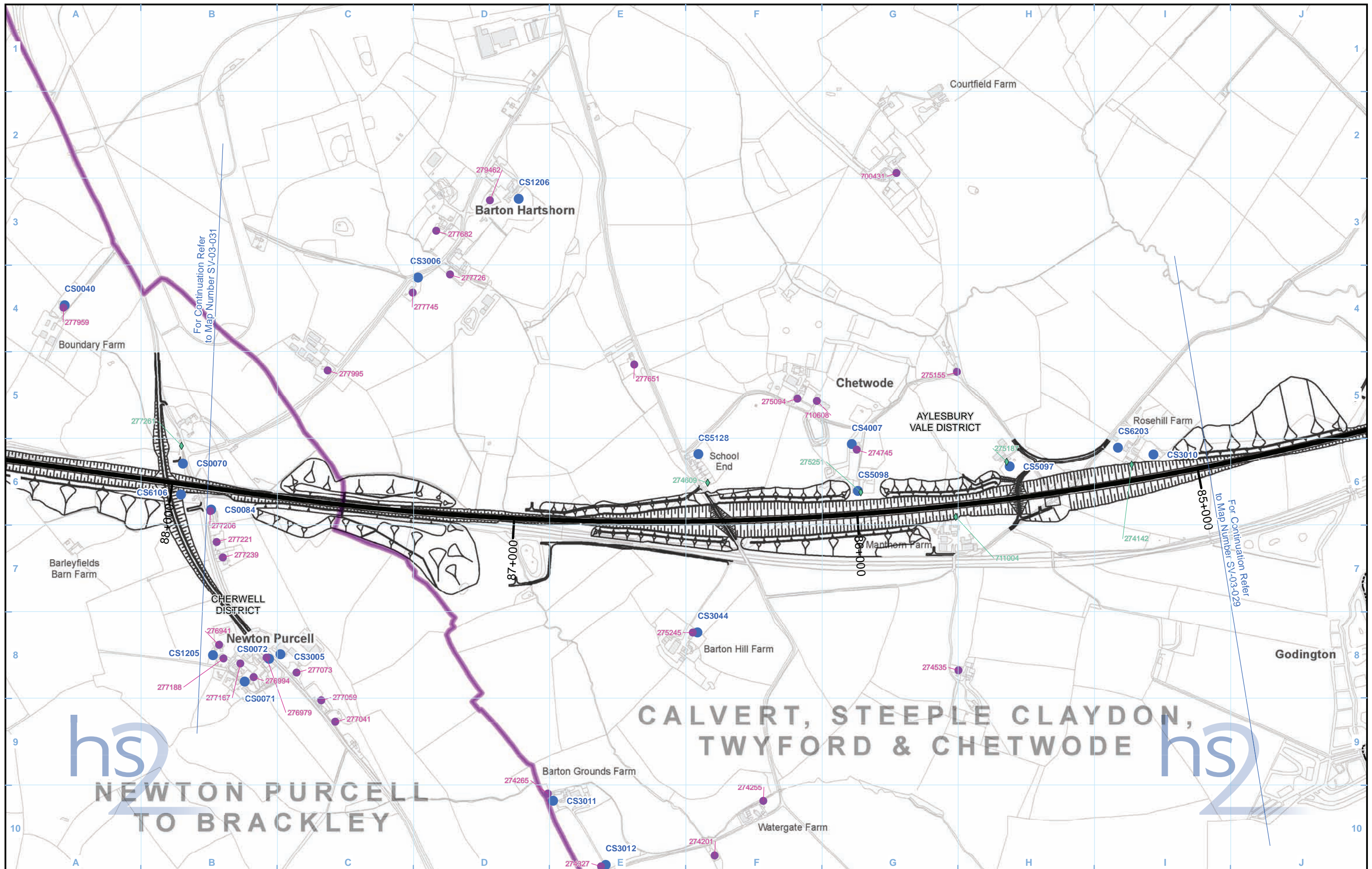
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Scale at A3: 1:10,000



**Date:** 29/10/13





#### Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

#### Engineering earthworks:

- Embankment
- Cutting

#### Non engineering earthworks:

- Embankment
- Cutting


#### Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-030
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode	




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Doc Number: C250-ARP-EV-MAP-000-003785



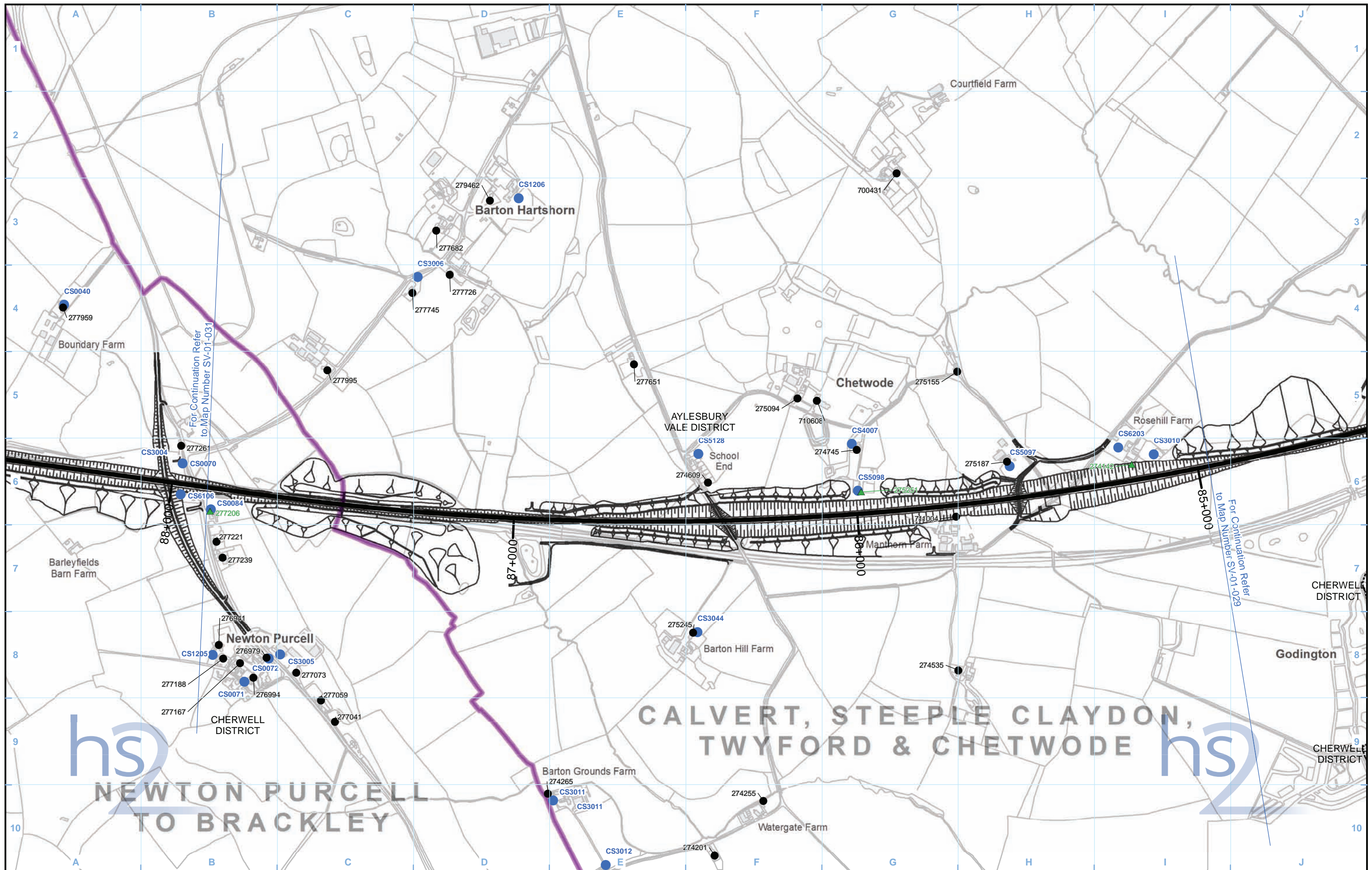
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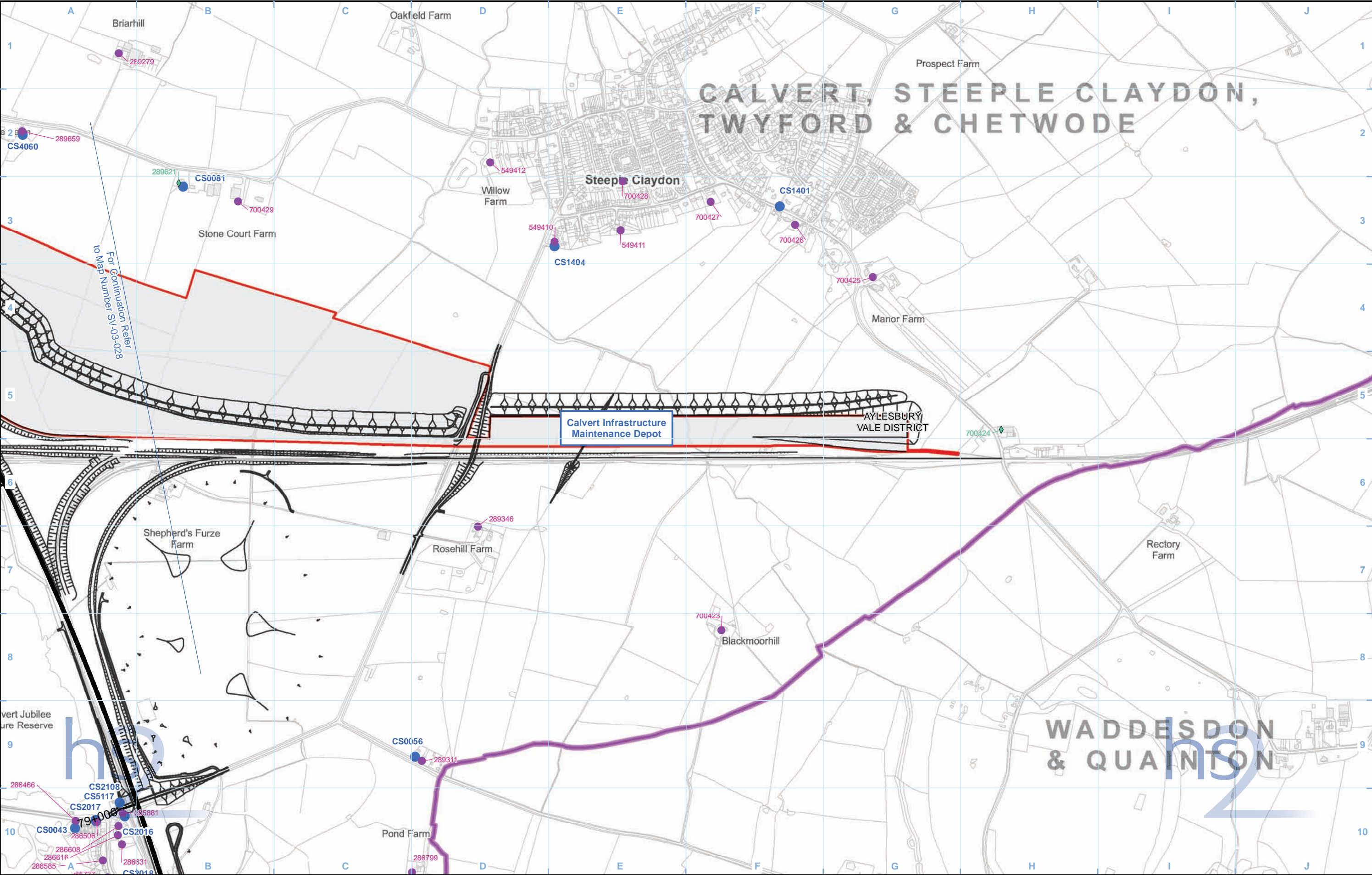
Date: 29/10/13





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Airborne sound assessment location</li><li>Airborne sound and vibration assessment location</li><li>Ground-borne sound and/or vibration assessment location</li><li>Airborne sound, ground-borne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see Vol 5 Appendix SV004)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-04-030</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p><b>Doc Number:</b> C250-ARP-EV-MAP-000-003886 <b>Date:</b> 29/10/13</p>
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>			Map Name <b>Assessment and Monitoring Locations for Operational Sound, Noise &amp; Vibration Assessments</b>	
<p><b>NEWTON PURCELL TO BRACKLEY</b></p> <p><b>CALVERT, STEEPLE CLAYDON, TWYFORD &amp; CHETWODE</b></p>					<p>Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford &amp; Chetwode</p>	





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

- Engineering earthworks:
- Embankment
  - Cutting
- Non engineering earthworks:
- Embankment
  - Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-072
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode	




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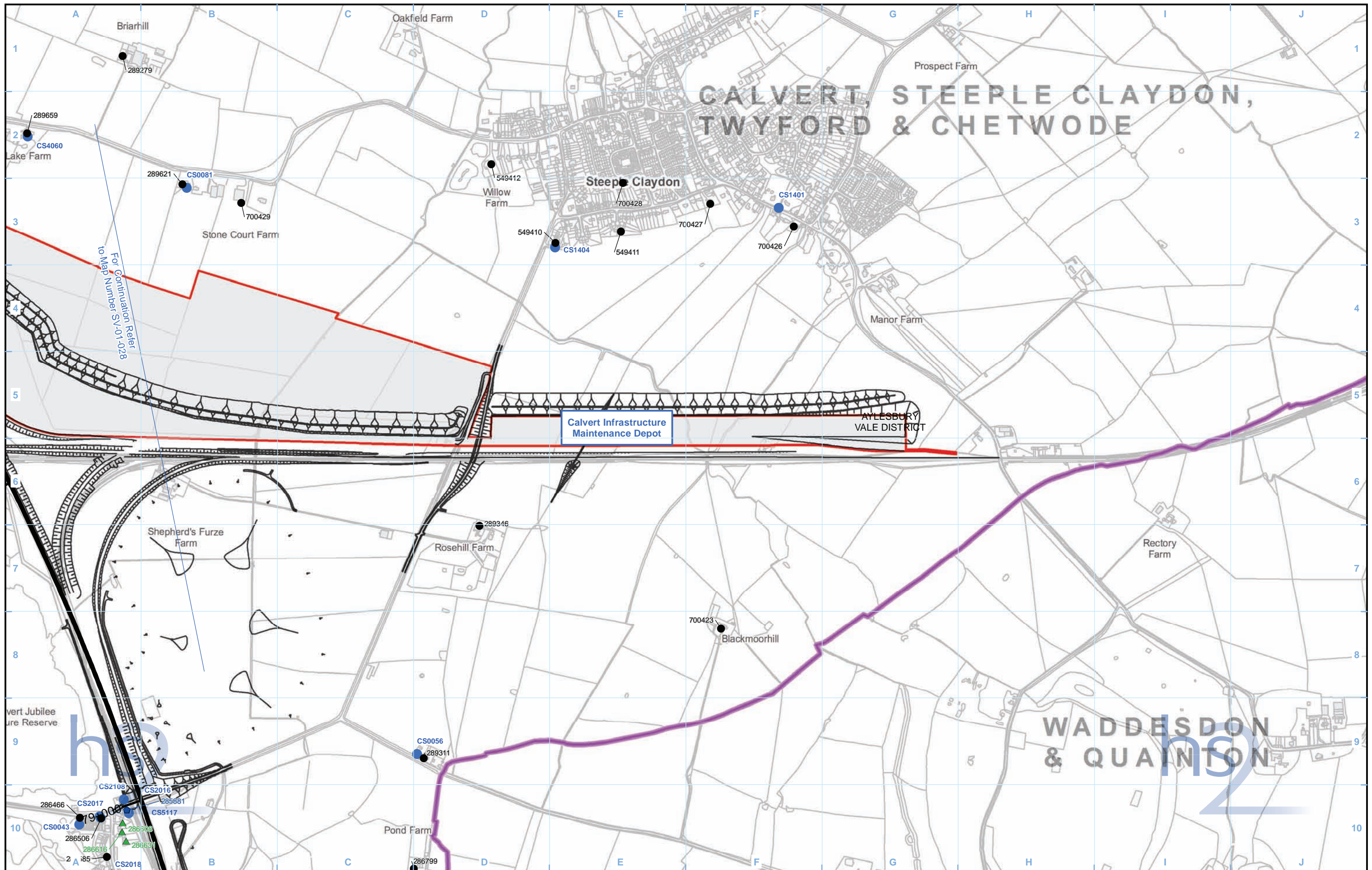
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0 100 200 300 400 Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)


Map Number	SV-04-072
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA13: Calvert, Steeple Claydon, Twyford & Chetwode	




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Doc Number: C250-ARP-EV-MAP-000-003887



Scale at A3: 1:10,000



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Metres

Date: 29/10/13



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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA14 | Newton Purcell to Brackley

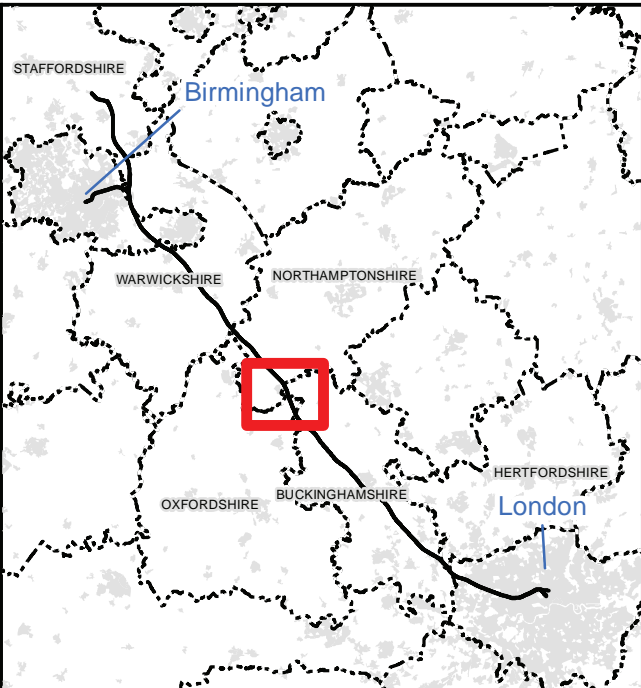
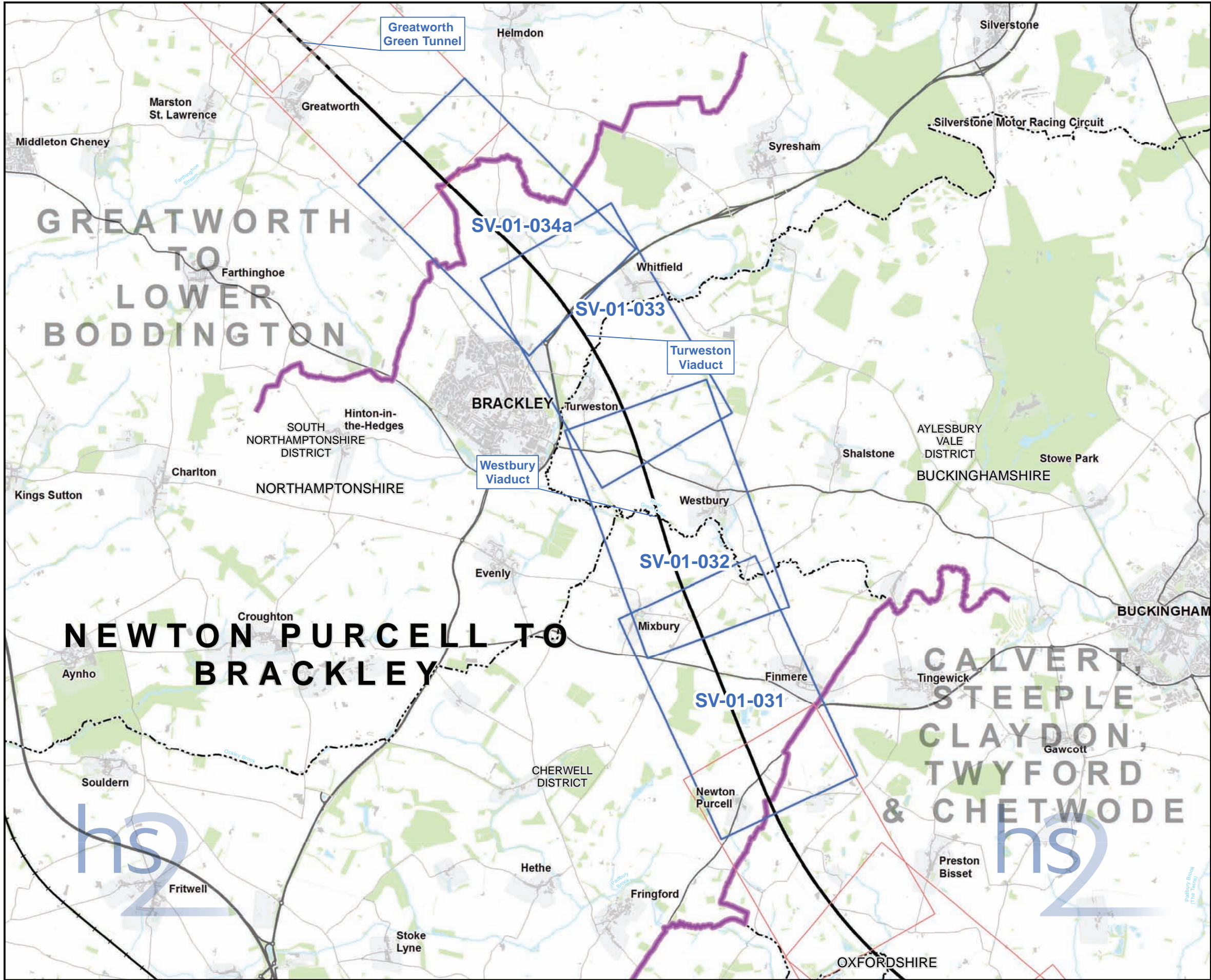
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





**Map Series Information:**

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

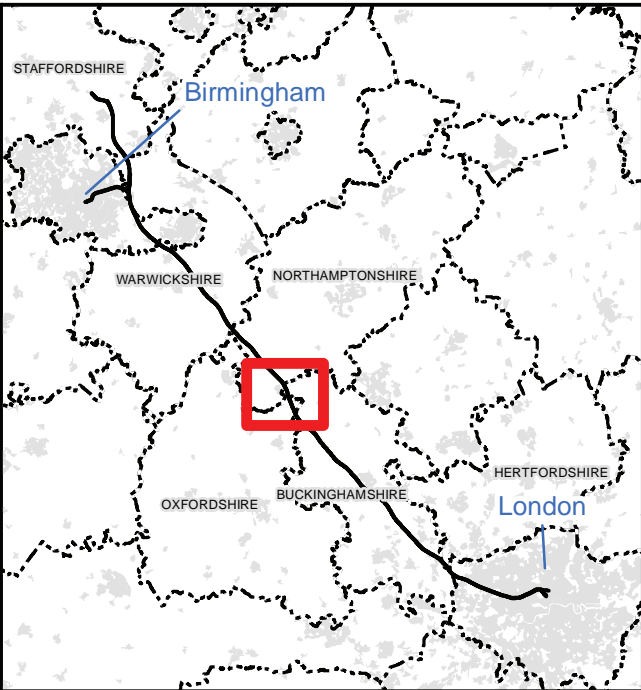
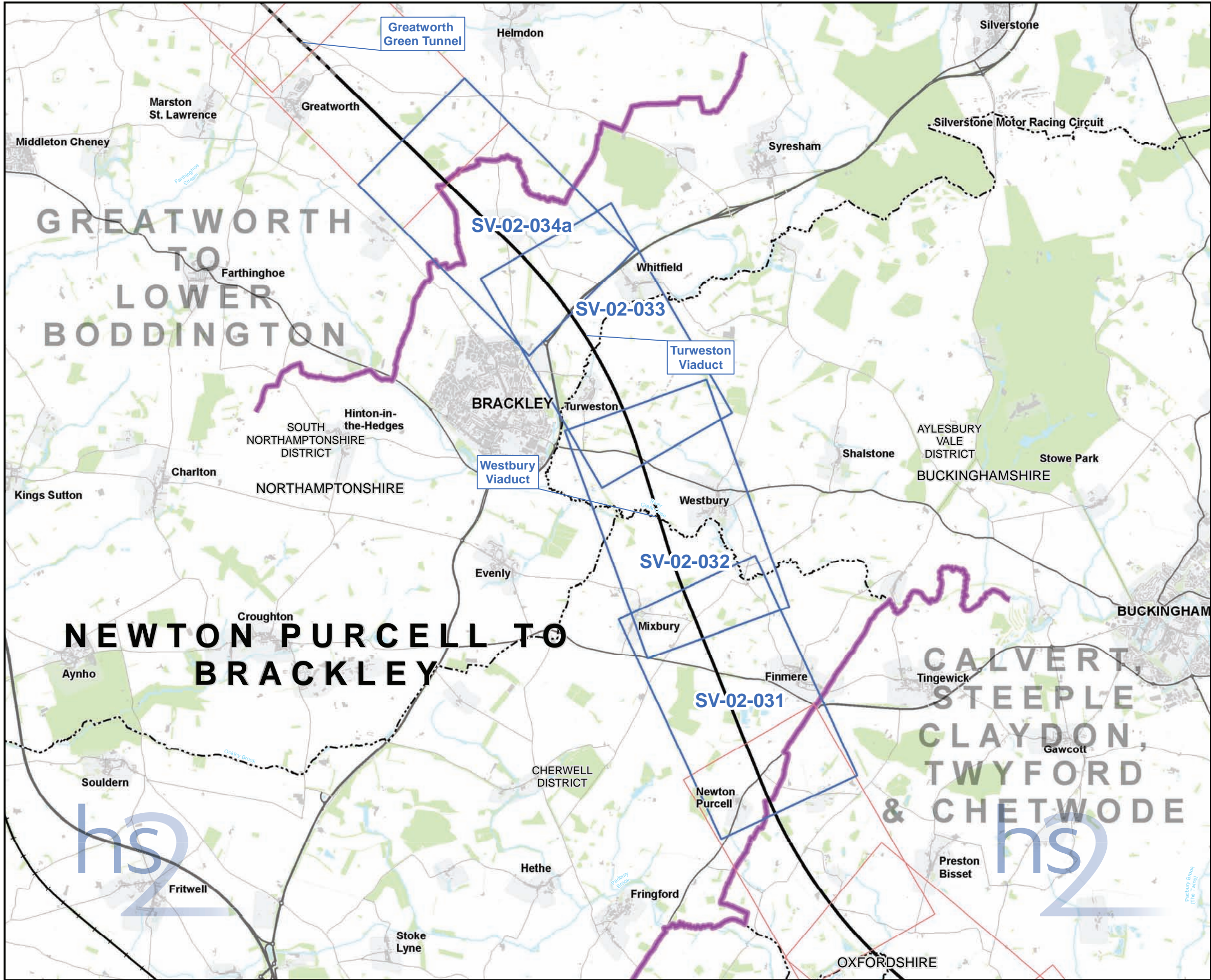
**Main Map Legend**

Route in tunnel	Map sheets included in this community forum
Route on surface	Map sheets not included in this community forum
Depot, station, headhouse or portal building	
Community forum boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-01-INDEX-CFA14
Map Name	Index Map of: Operational Sound Contour Maps and Likely Significant Effects
	Community Forum Area CFA14: Newton Purcell to Brackley

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### Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community forum boundary
	Existing railway station
	County boundary
	District/Borough boundary
	Map sheets included in this community forum
	Map sheets not included in this community forum

Map Number	SV-02-INDEX-CFA14
Map Name	Index Map of: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)
Community Forum Area CFA14: Newton Purcell to Brackley	

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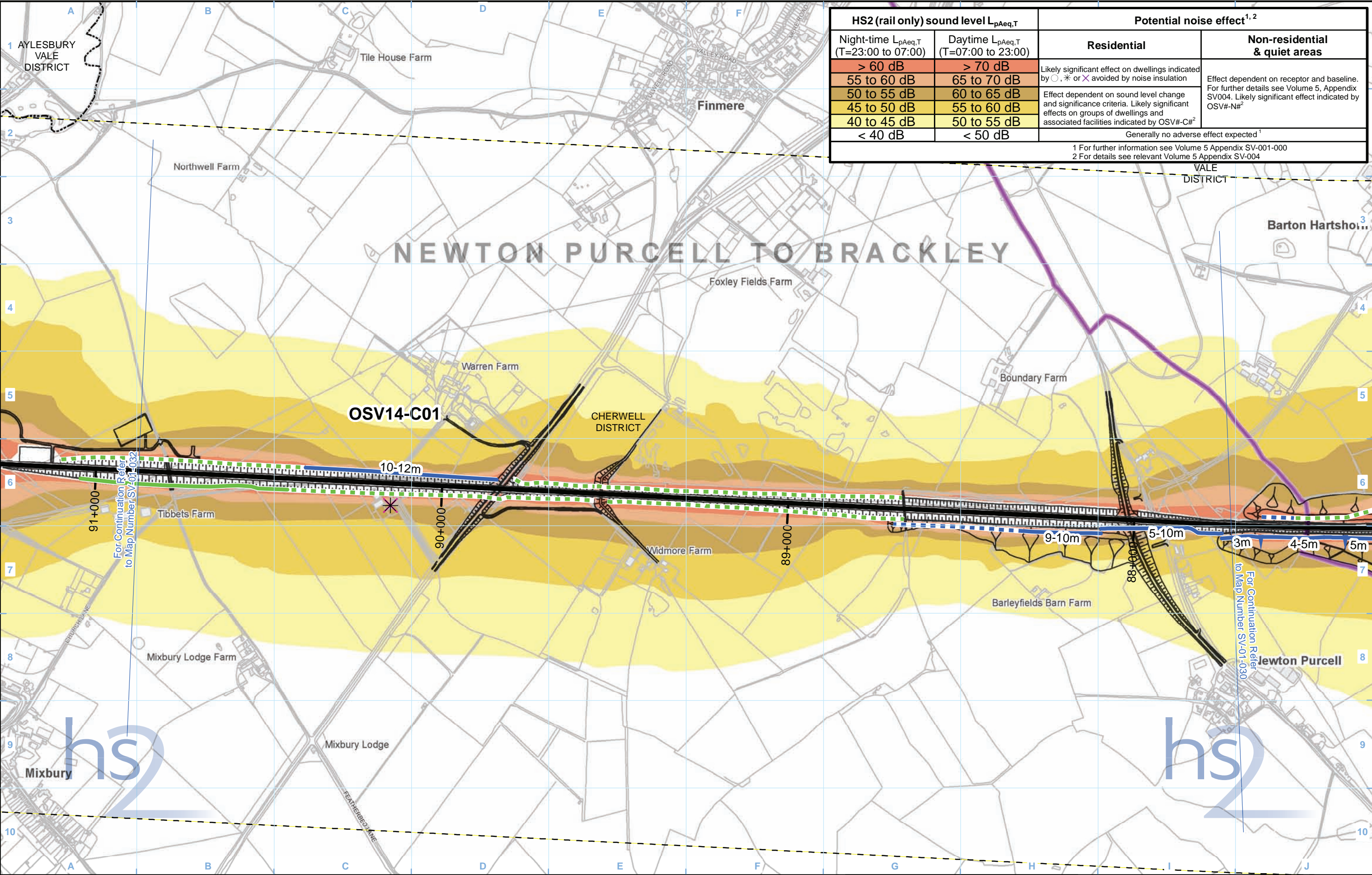
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Date: 29/10/13

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HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-031

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA14:

Newton Purcell to Brackley

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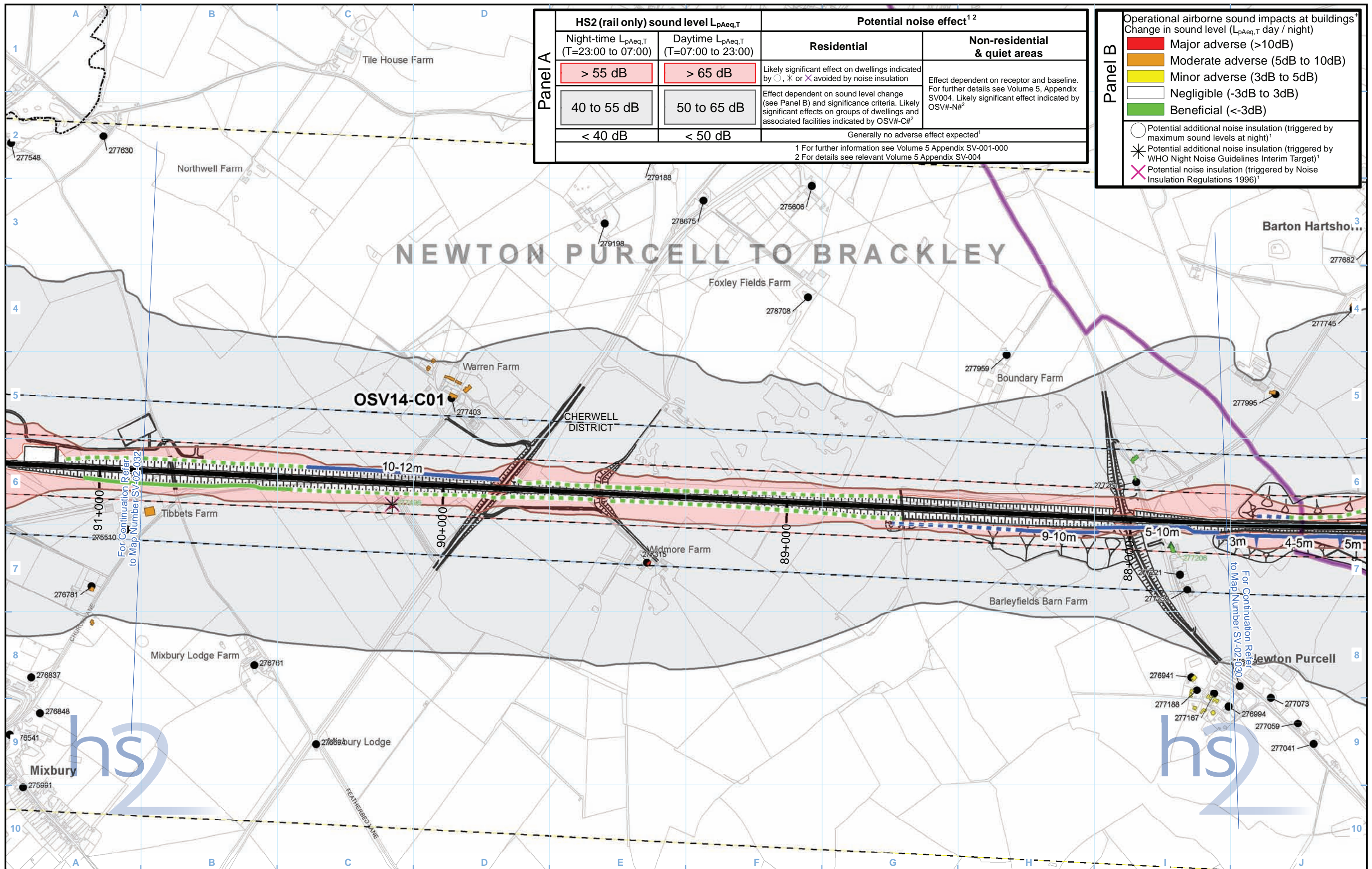
Metres

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Doc Number: C250-ARP-EV-MAP-000-003576

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
	Beneficial (<-3dB)	
○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>		
✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>		
✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>		

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
  - Other environmental features e.g. landscaping
- Envisaged measures further reducing noise effects:
  - Engineering e.g. cuttings
  - Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-031

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA14:  
Newton Purcell to Brackley

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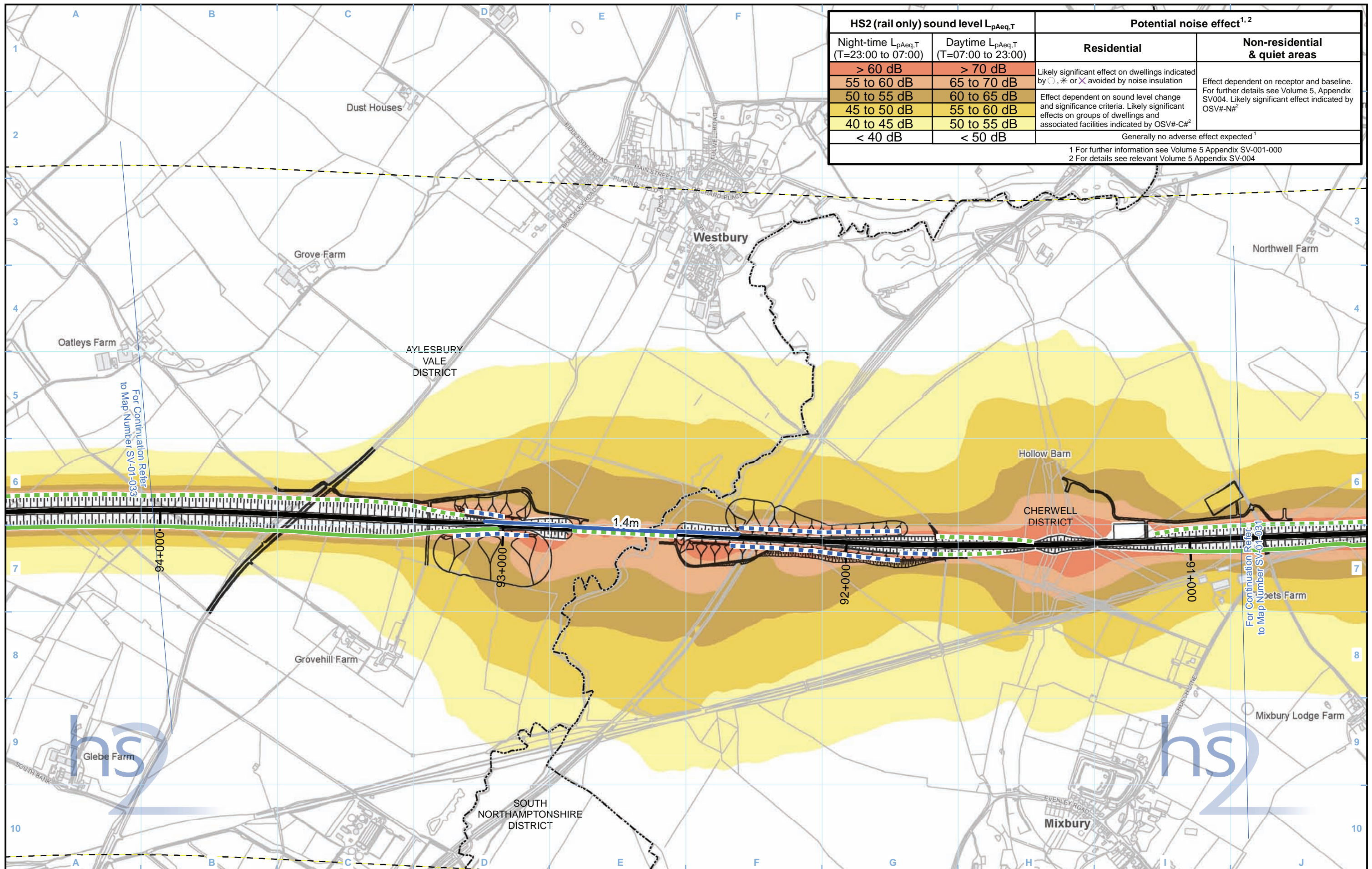
Doc Number: C250-ARP-EV-MAP-000-003686

Scale at A3: 1:10,000

Metres

Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Map Number  
**SV-01-032**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA14:  
Newton Purcell to Brackley

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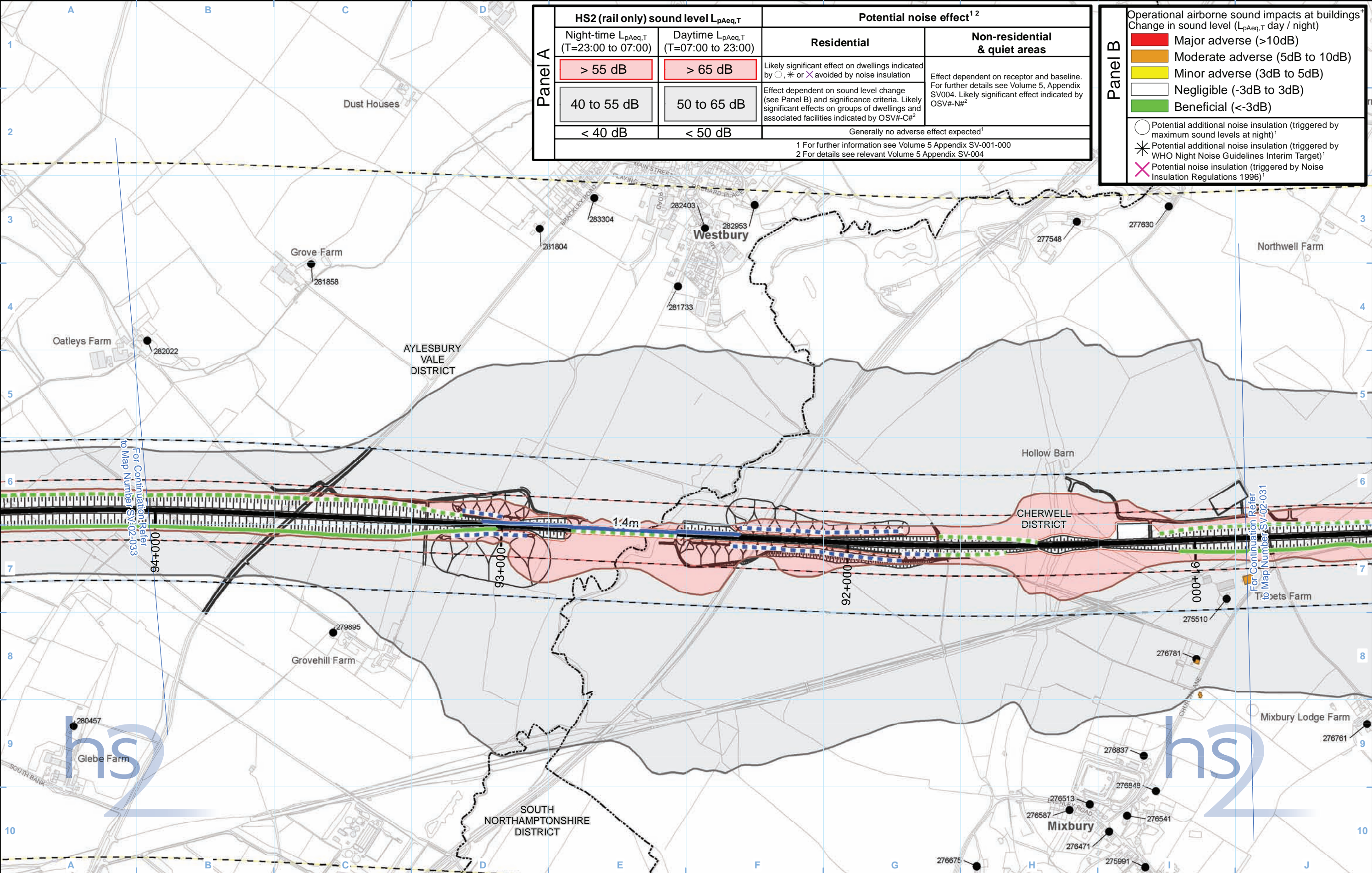
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Scale at A3: 1:10,000

Date: 29/10/13





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings* Change in sound level (L <sub>pAeq,T</sub> day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

- Engineering earthworks:
- Embankment
  - Cutting
- Non engineering earthworks:
- Embankment
  - Cutting
- \* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number SV-02-032

Map Name Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA14: Newton Purcell to Brackley

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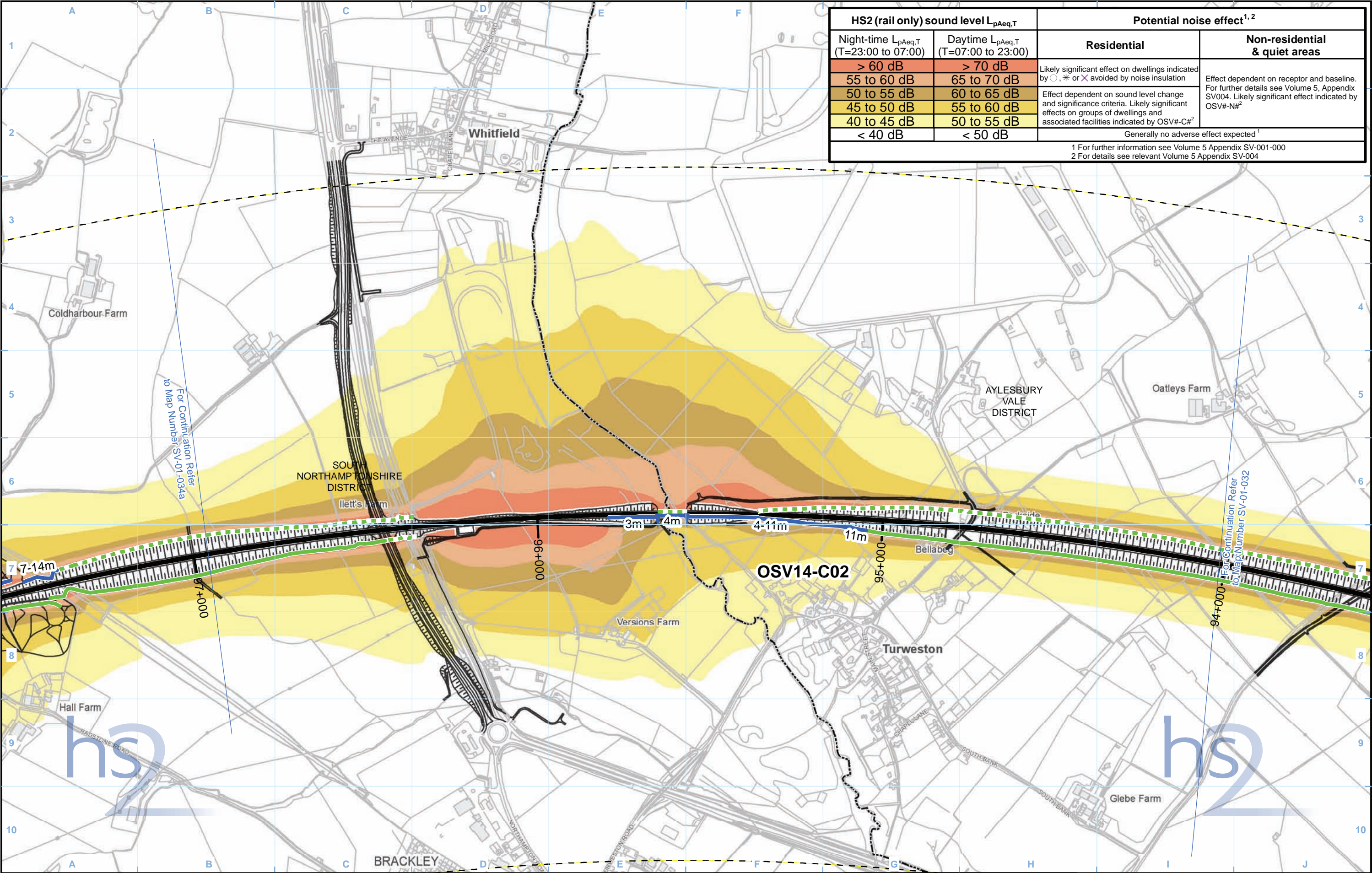
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Doc Number: C250-ARP-EV-MAP-000-003687

Date: 31/10/13





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

Airborne sound study area

- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number  
**SV-01-033**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA14:  
Newton Purcell to Brackley

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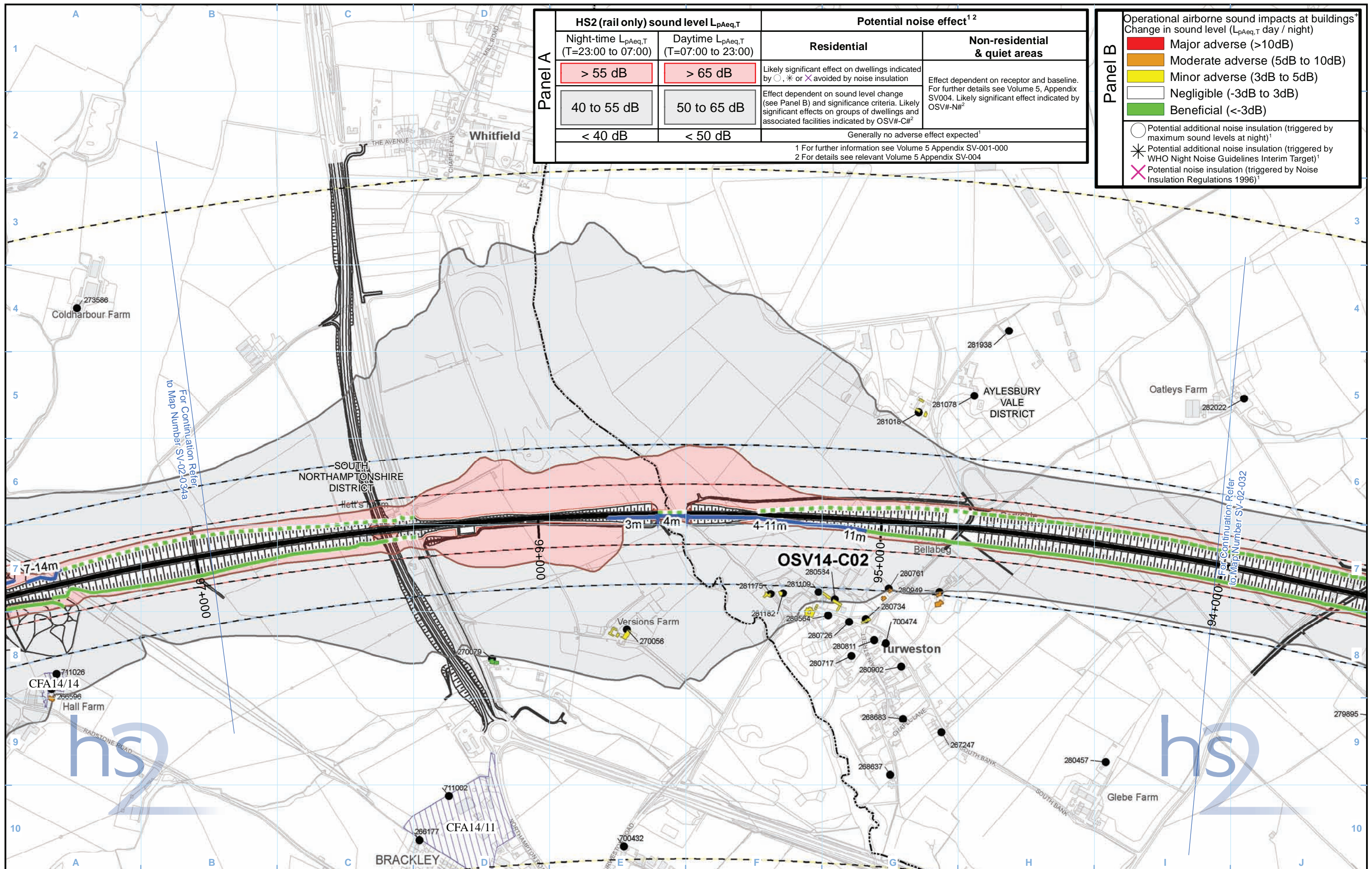
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

\* Residential buildings only

\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-033

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA14: Newton Purcell to Brackley

hs2

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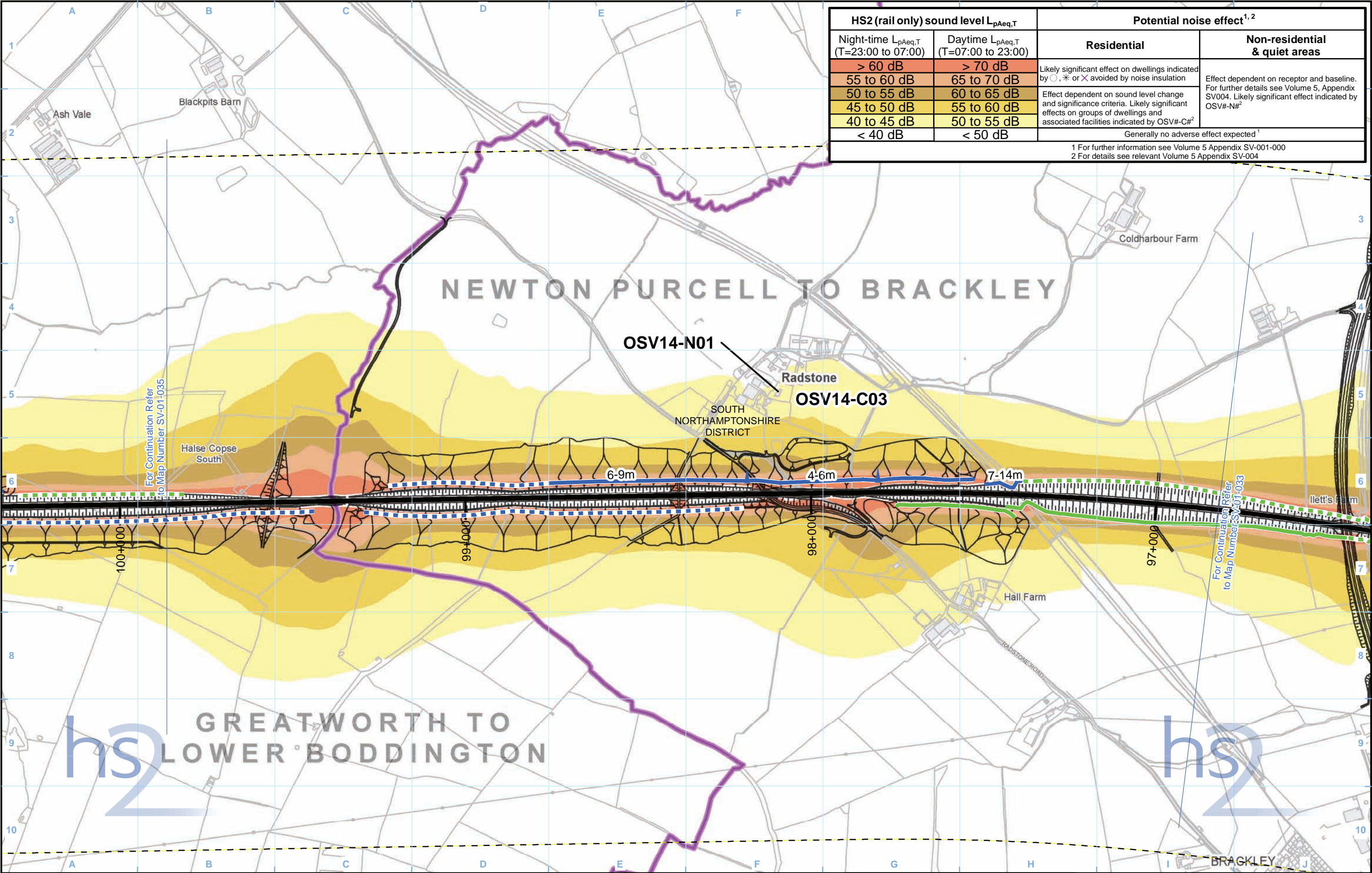
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Map Number  
**SV-01-034a**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA14:  
Newton Purcell to Brackley

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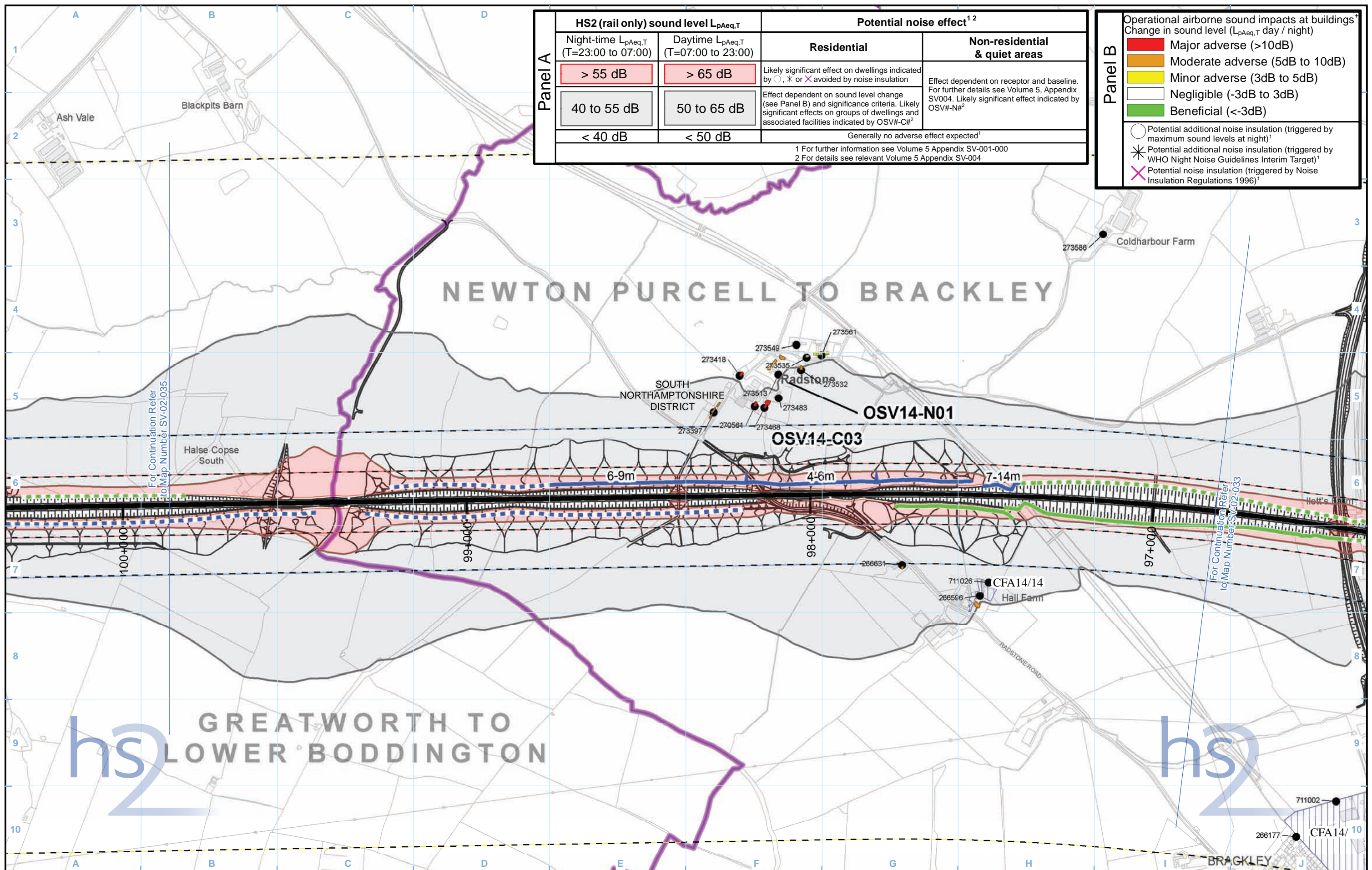
Scale at A3: 1:10,000

Metres

Date: 29/10/13

\* Labelled with total barrier height above rail level





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

**Map Number**  
SV-02-034a

**Map Name**  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

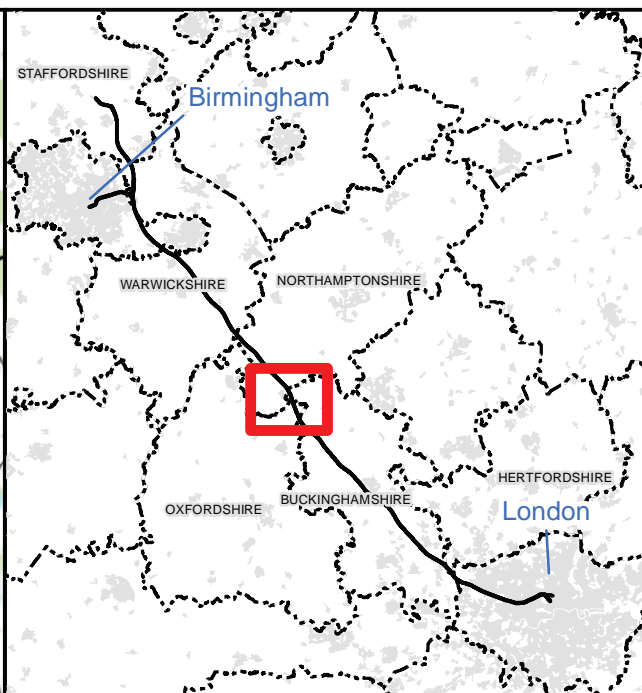
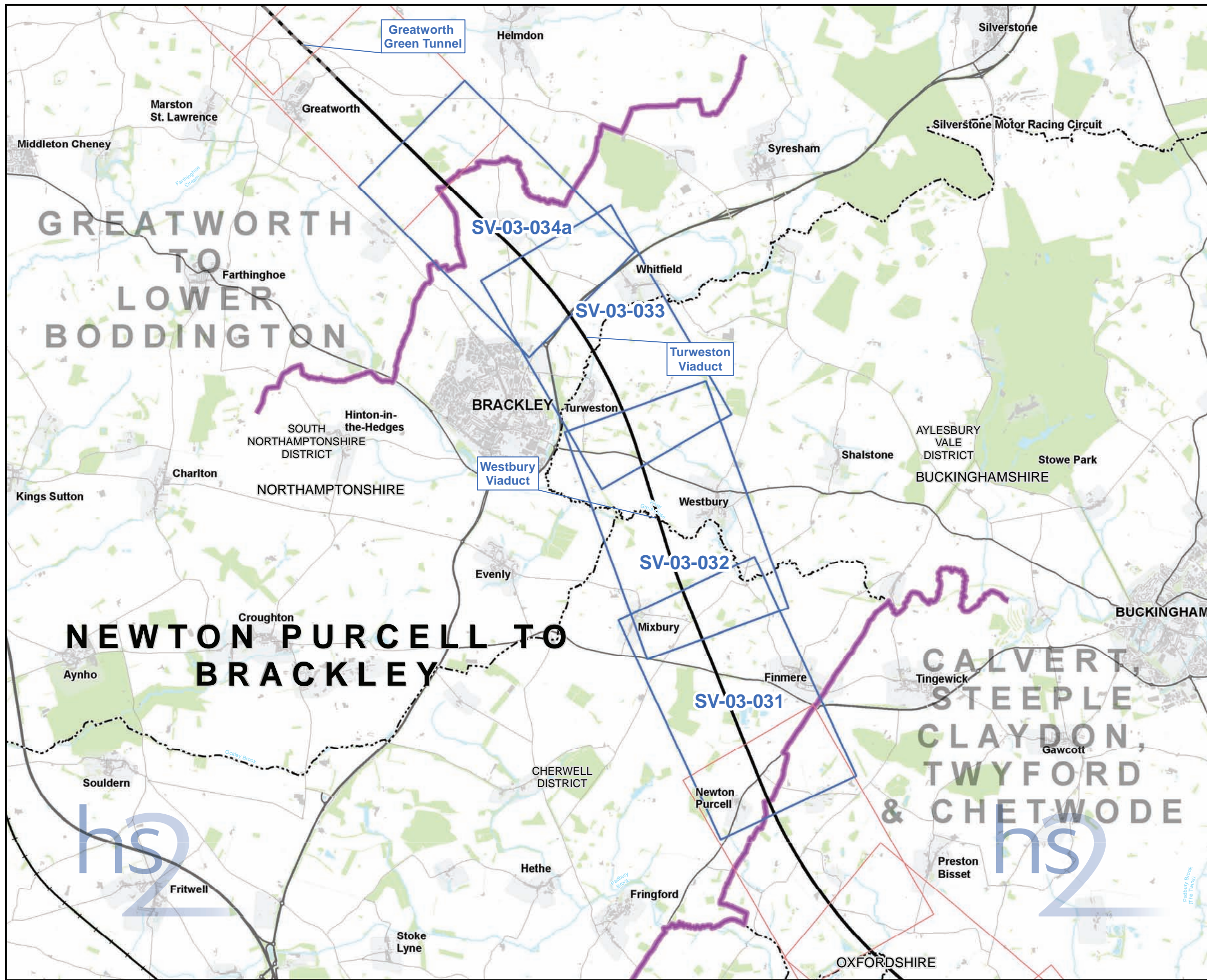
**Community Forum Area CFA14:**  
Newton Purcell to Brackley

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**Date:** 31/10/13





**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

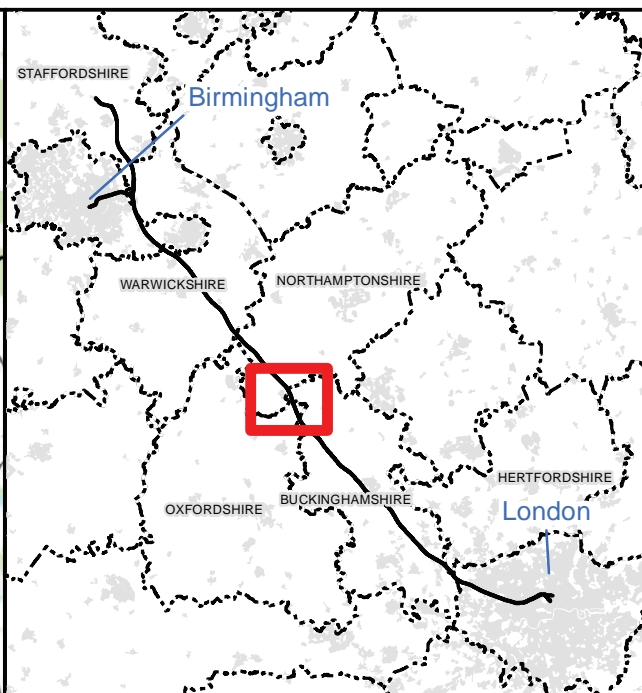
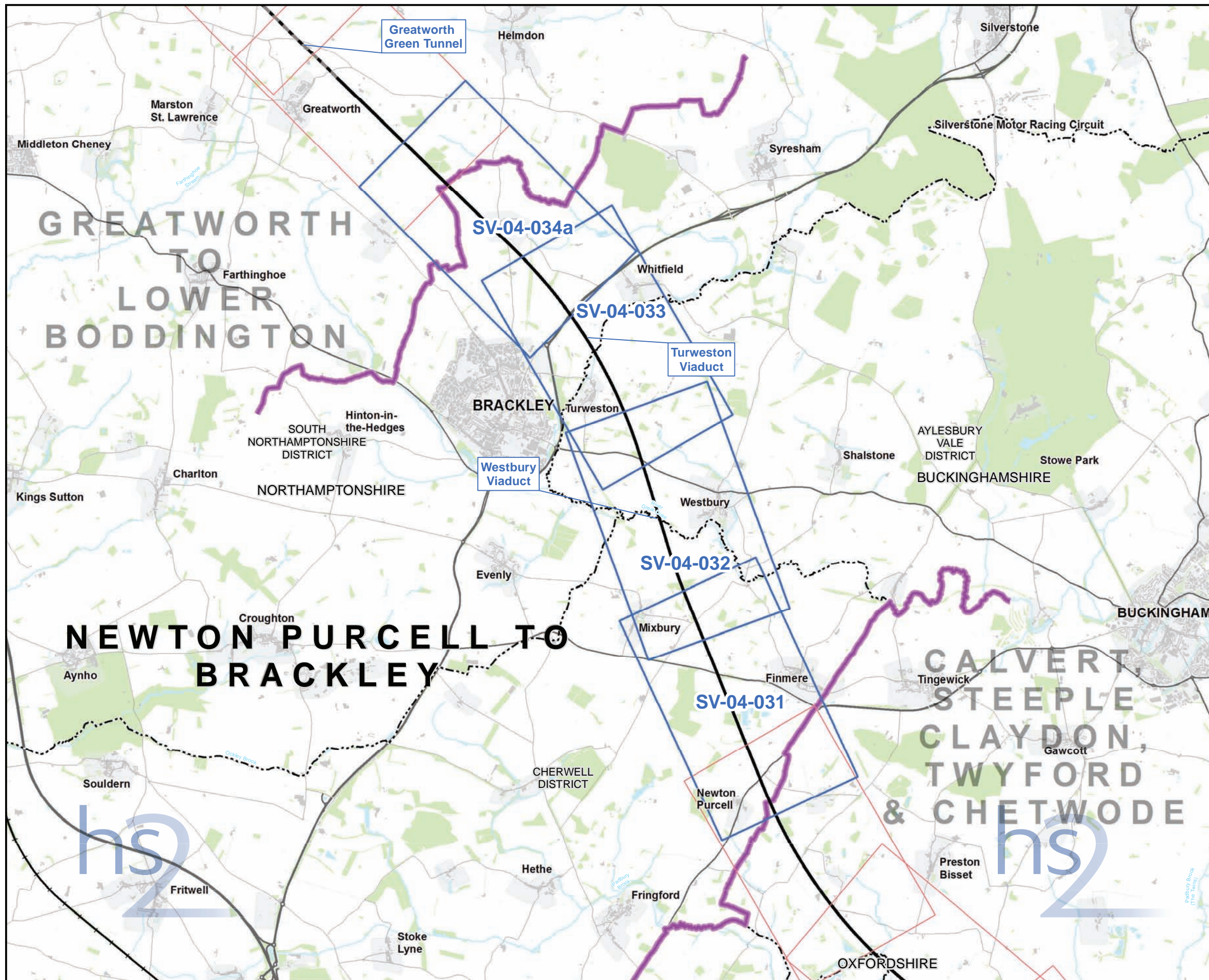
**Main Map Legend**

Route in tunnel	Map sheets included in this community forum
Route on surface	Map sheets not included in this community forum
Depot, station, headhouse or portal building	
Community forum boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-03-INDEX-CFA14
Map Name	Index Map of: Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	

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**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

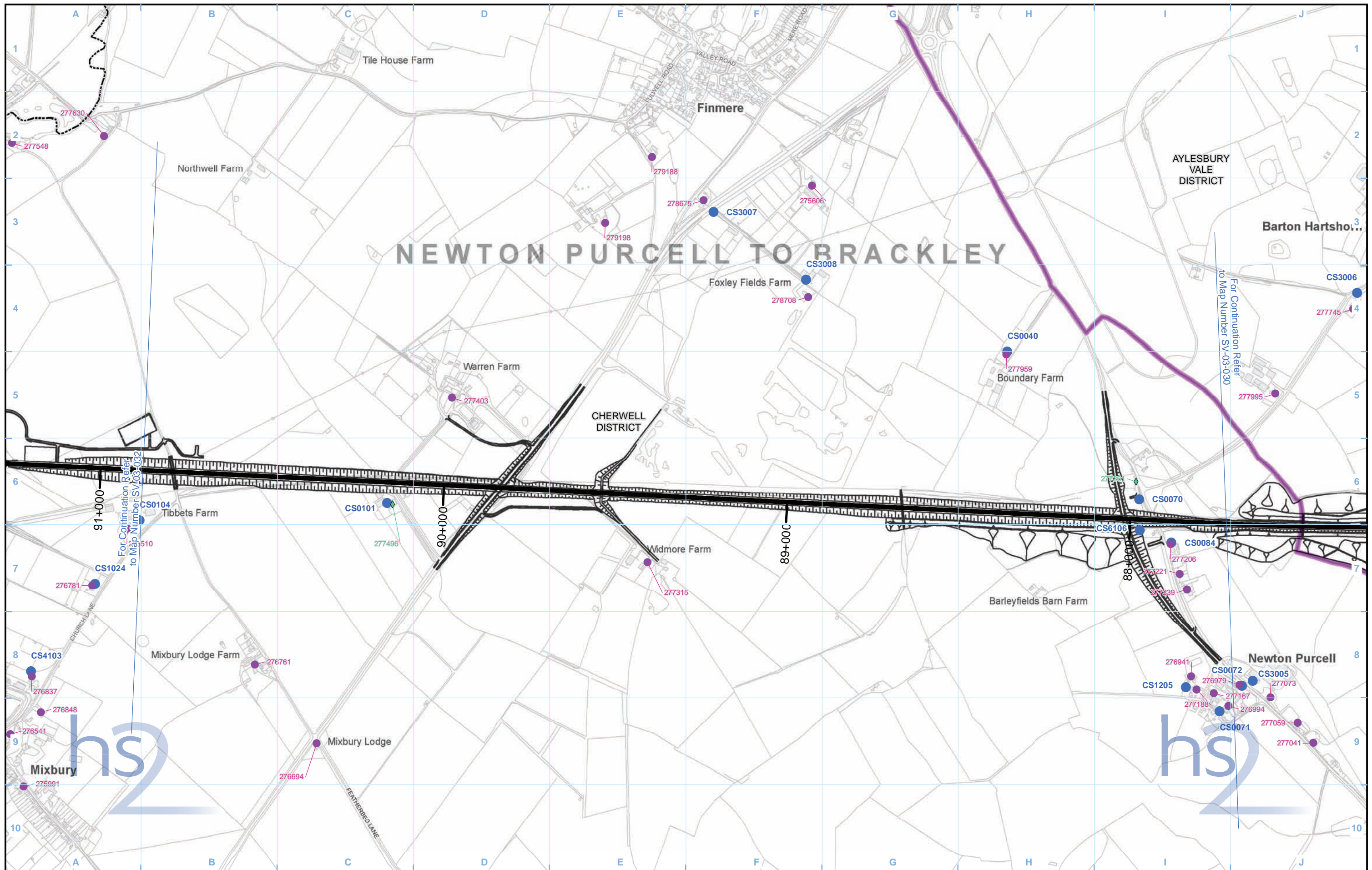
Note: Not all data layers in the legend are represented on every map.

<b>Main Map Legend</b>	
Route in tunnel	Map sheets included in this community forum
Route on surface	Map sheets not included in this community forum
Depot, station, headhouse or portal building	
Community forum boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-04-INDEX-CFA14
Map Name	Index Map of: Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	

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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)


Map Number	SV-03-031
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	




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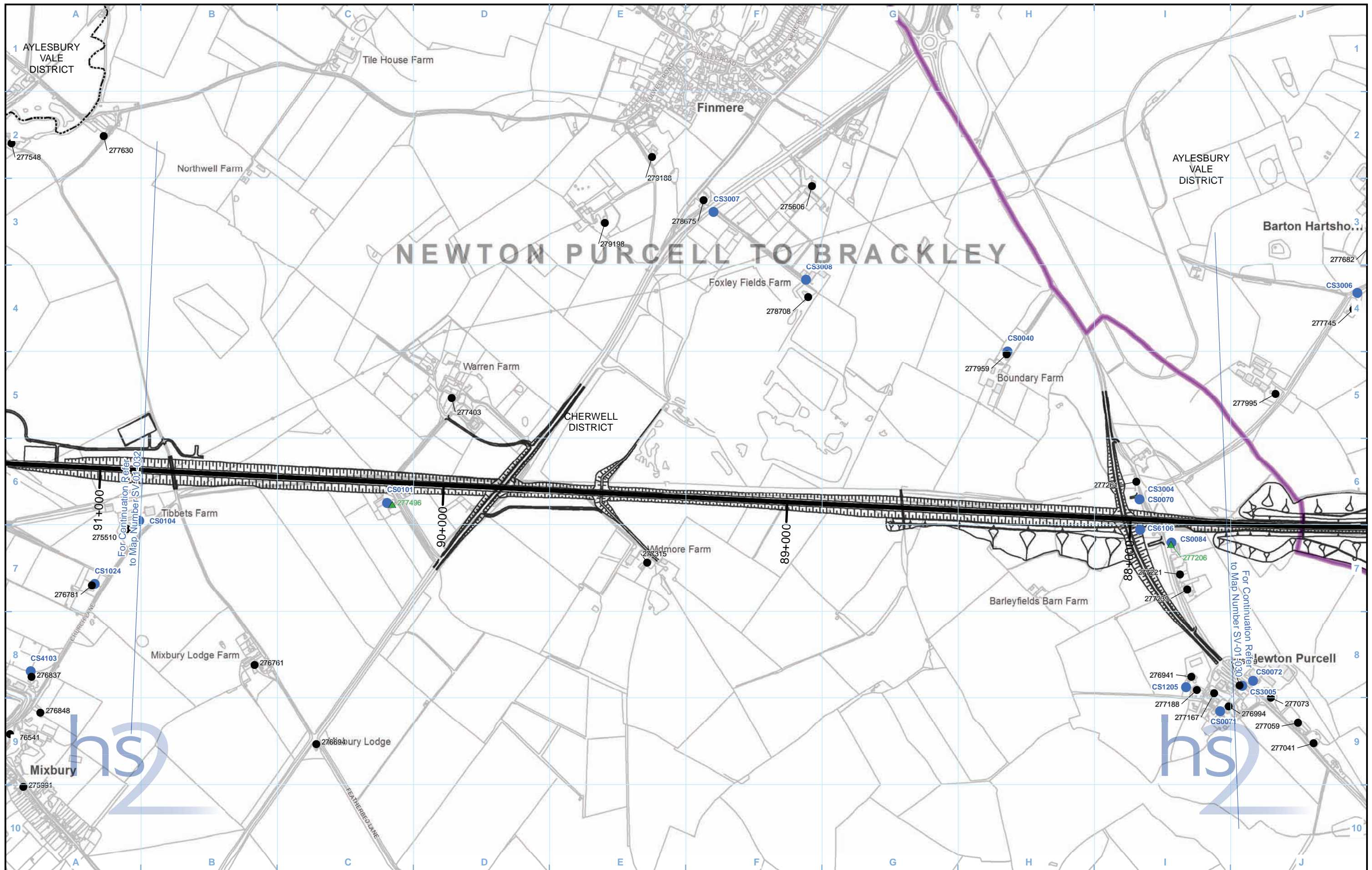
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0 100 200 300 400 Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code


Map Number	SV-04-031
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	




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Doc Number: C250-ARP-EV-MAP-000-003888



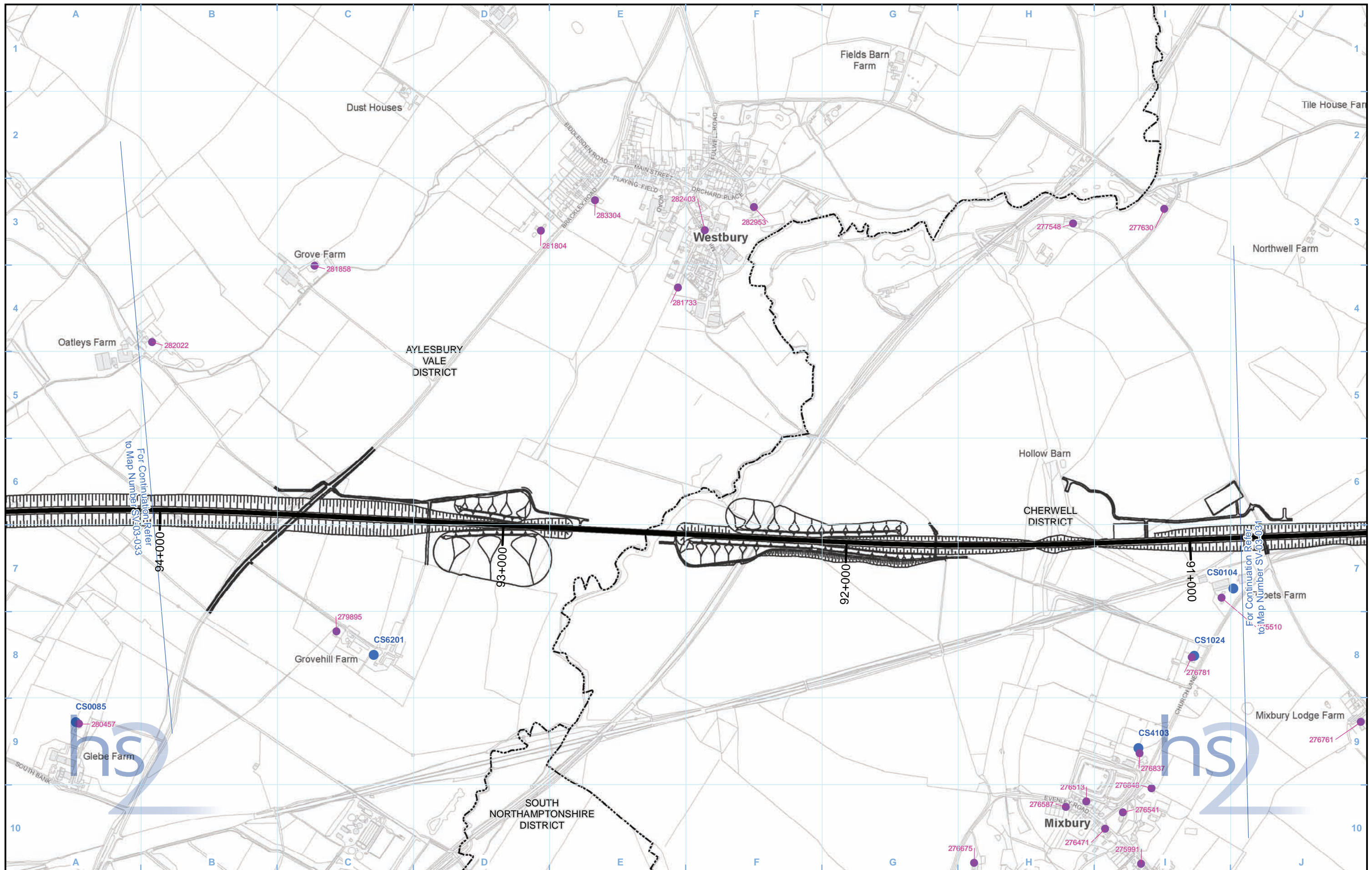
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0 100 200 300 400 Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number	SV-03-032
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	




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Doc Number: C250-ARP-EV-MAP-000-003788

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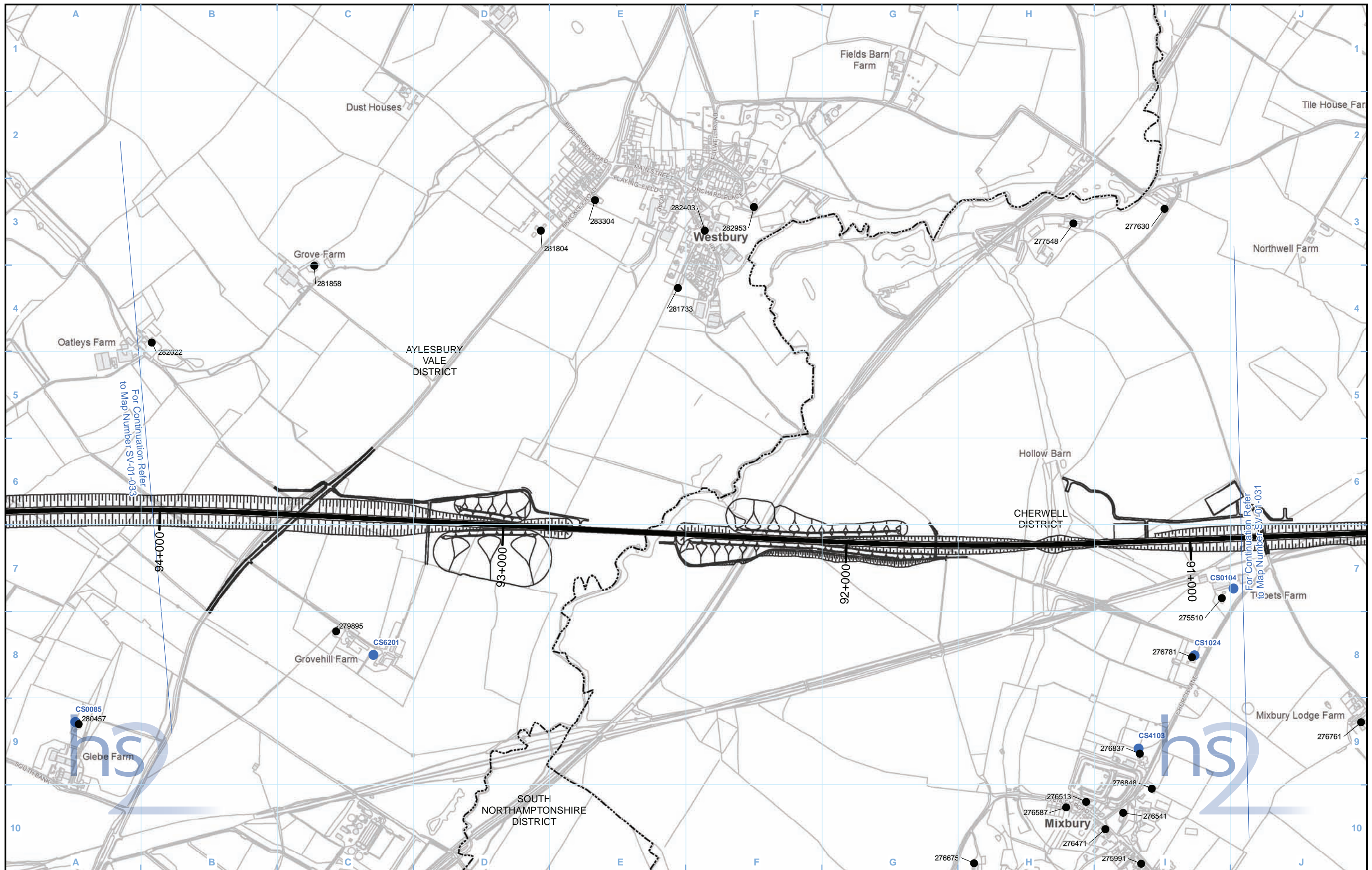


Metres



Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

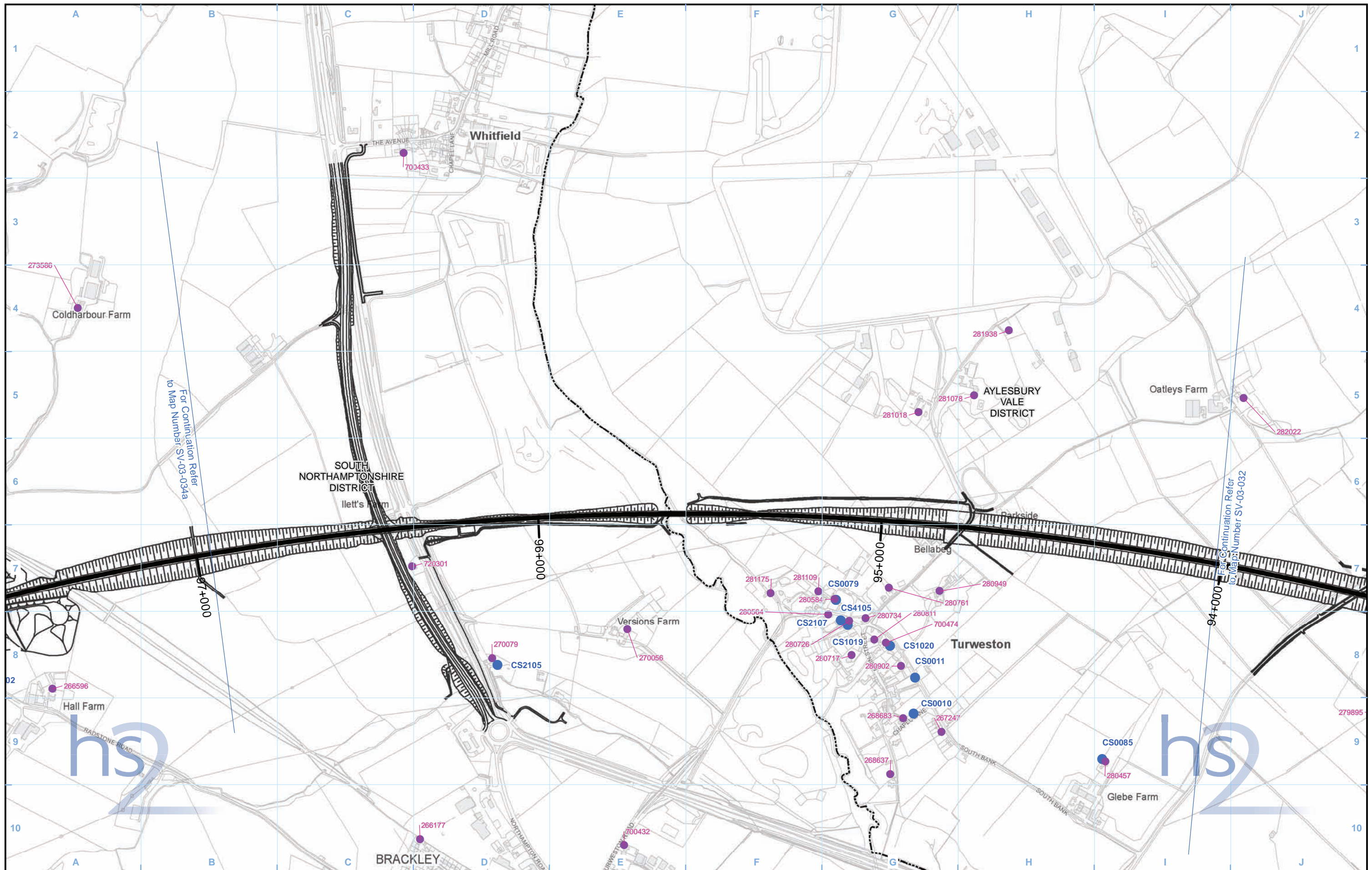
labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code

Map Number	SV-04-032
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	

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Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

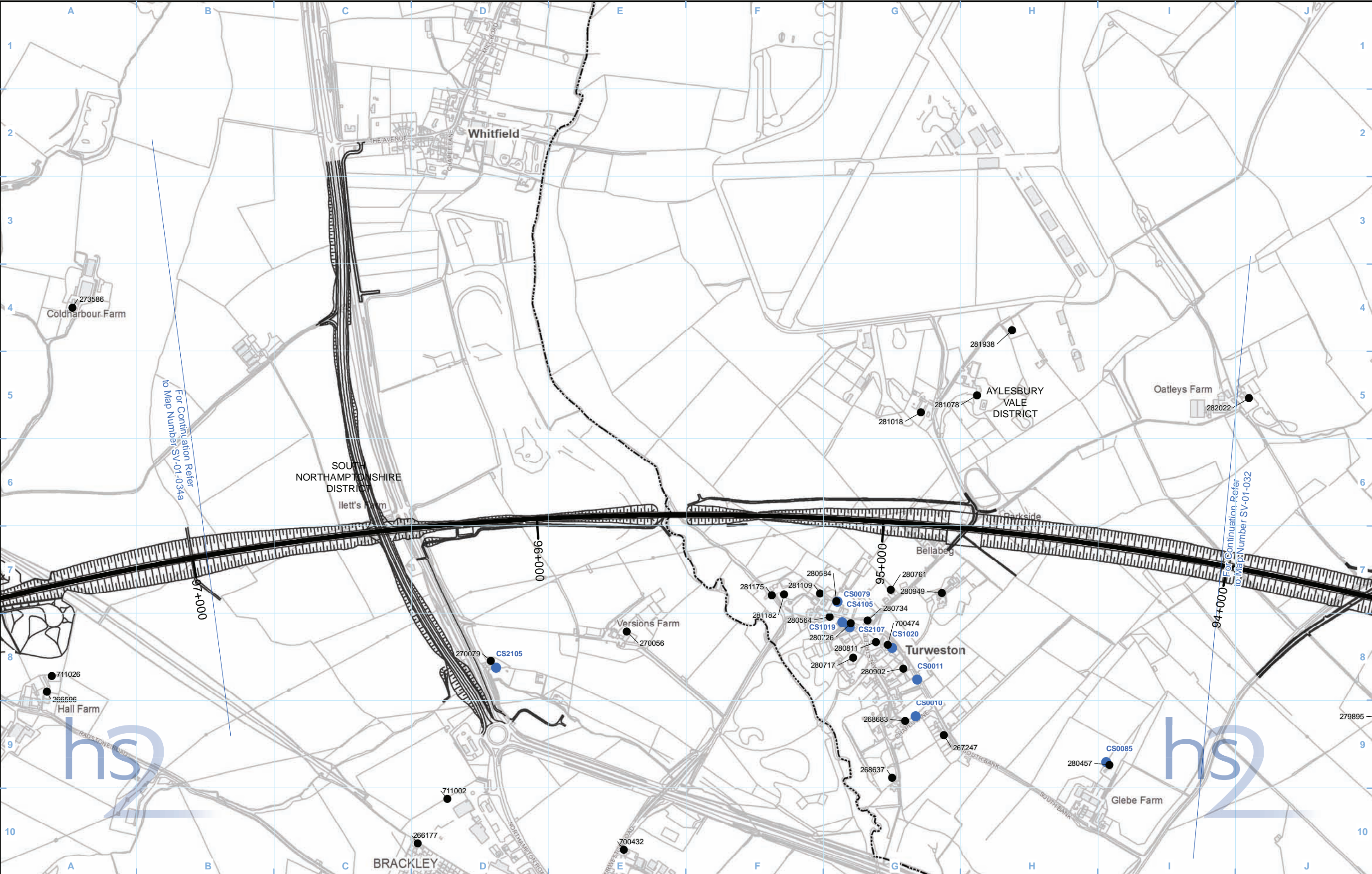
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(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number	SV-03-033
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	

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Doc Number: C250-ARP-EV-MAP-000-003789	Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number  
**SV-04-033**

Map Name  
**Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments**

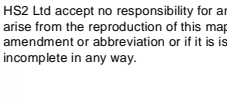
Community Forum Area CFA14:  
Newton Purcell to Brackley



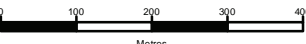
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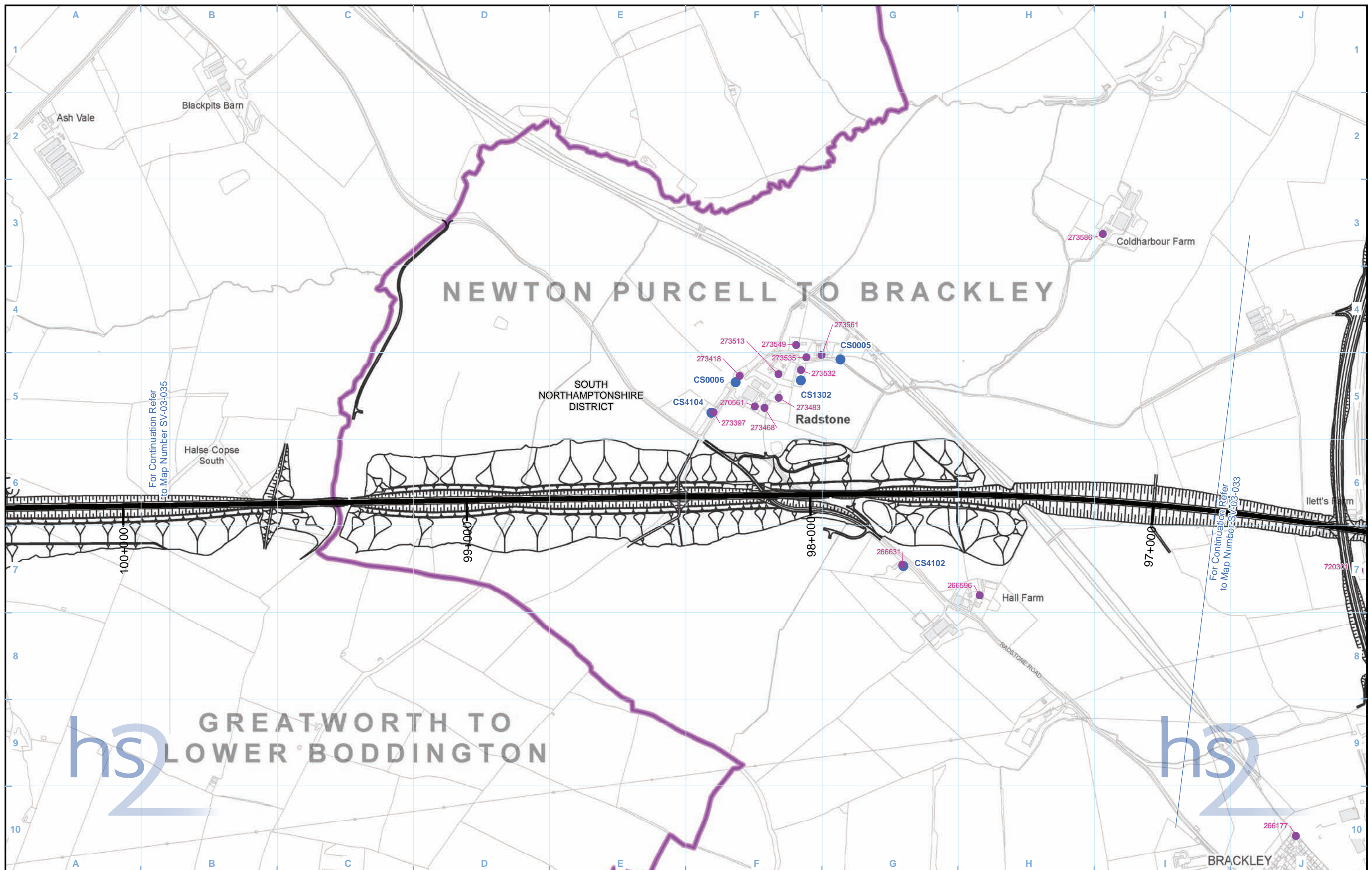


Scale at A3: 1:10,000



Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

(labelled with Measurement Location reference code)

Map Number	SV-03-034a
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	




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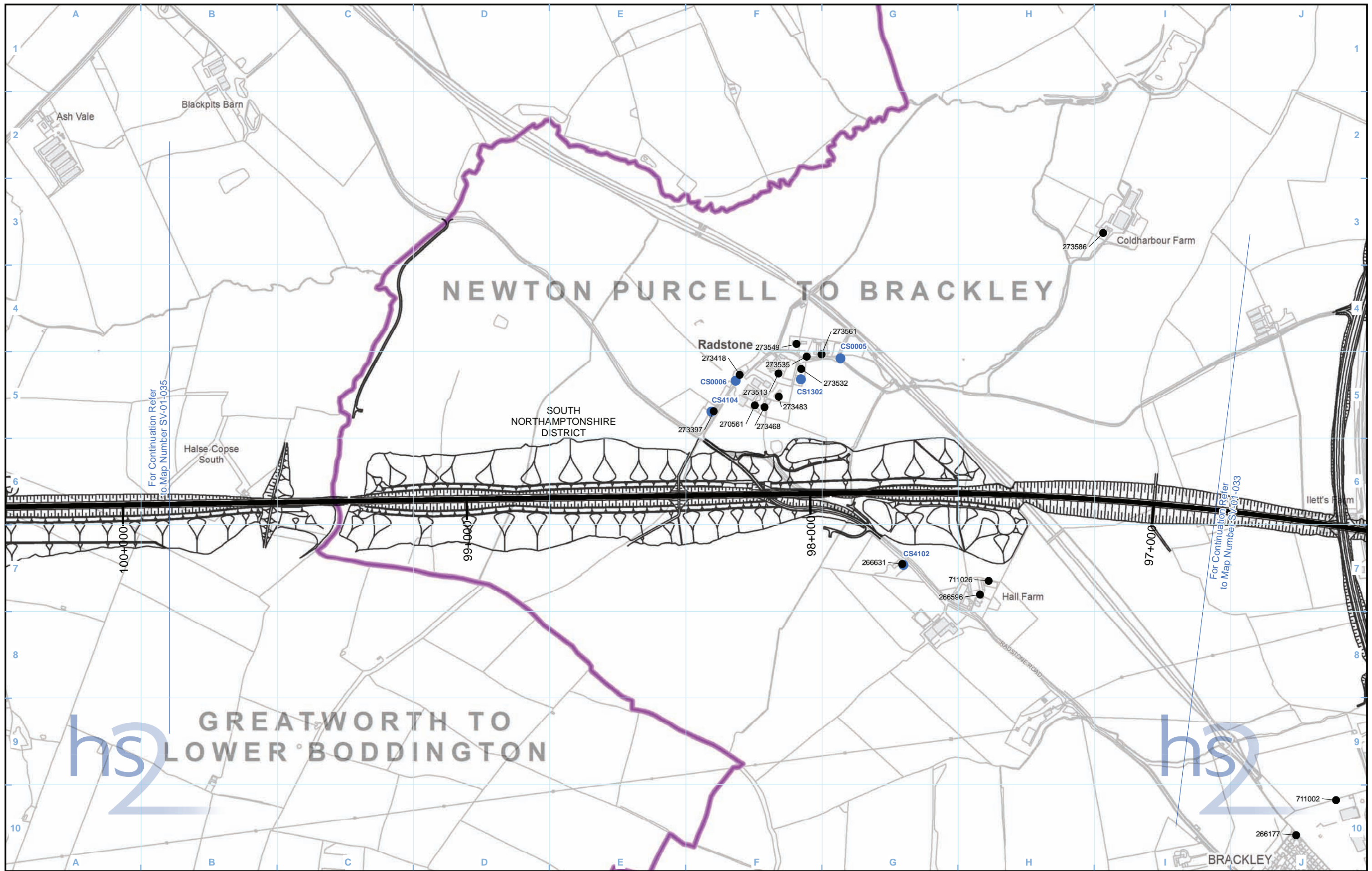
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0 100 200 300 400  
Metres

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting


Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-034a
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA14: Newton Purcell to Brackley	




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Doc Number: C250-ARP-EV-MAP-000-003891



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Metres

Date: 29/10/13



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# LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

CFA15 | Greatworth to Lower Boddington

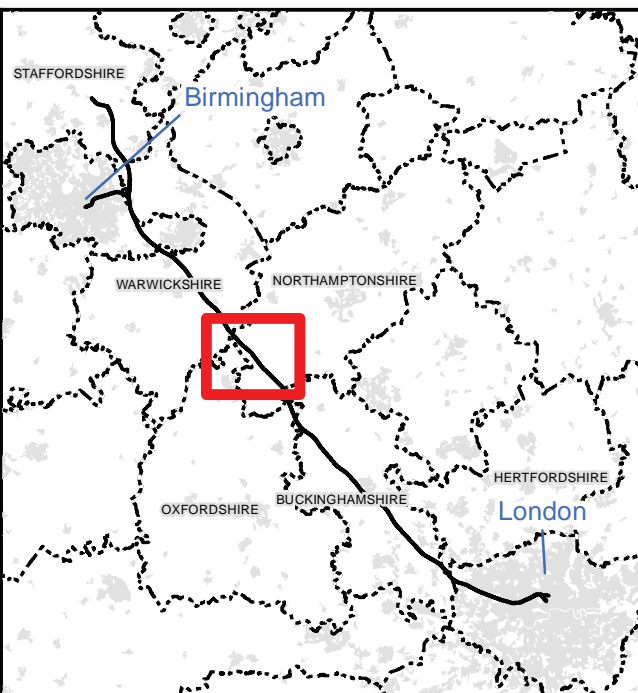
SV-01 - Operational Sound Contour Maps and Likely Significant Effects

SV-02 - Operational Airborne Noise and Vibration Impacts and Likely Significant Effects  
(with Assessment Locations)

SV-03 - Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments

SV-04 - Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments





### Map Series Information:

SV-01 presents the predicted operational sound from the new railway.

The sound levels from the new railway (expressed as  $L_{pAeq,T}$ ) are presented in typical noise mapping colours in 5 dB steps. There is a panel at the top right of the figure; the left-hand section of this panel contains a key communicating the night-time and daytime sound levels represented by the various colours. The right-hand part of the same panel contains text explaining how the sound levels presented on the figure inform the assessment of direct noise impacts and likely significant effects. A corresponding and similar panel is found on SV-02, along with the key sound contours that were used within the environmental assessment.

Also presented on SV-01 are the following (which are also included on SV-02):

- A representation of the Proposed Scheme, including the railway alignment (indicating whether it is on the surface or in tunnel), any new and altered roads and all associated engineering and environmental mitigation earthworks;
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- symbols representing buildings that would potentially qualify for noise insulation;
- labels identifying the residual likely significant noise effects of the Proposed Scheme, and
- the extent of the study area within which the direct impacts and effects of the scheme have been quantitatively assessed.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community forum boundary
	Existing railway station
	County boundary
	District/Borough boundary
	Map sheets included in this community forum
	Map sheets not included in this community forum

Map Number	SV-01-INDEX-CFA15
Map Name	Index Map of: Operational Sound Contour Maps and Likely Significant Effects
Community Forum Area CFA15: Greatworth to Lower Boddington	

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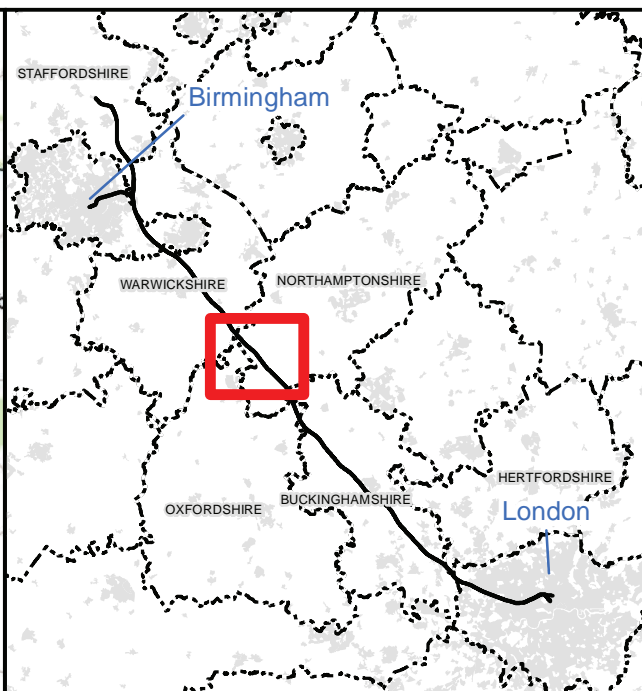
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Doc Number: C250-ARP-EV-MAP-000-004072--P04.00

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### Map Series Information:

SV-02 presents the direct operational noise impacts and likely significant effects of the Proposed Scheme.

The SV-02 figure series necessarily contains a large amount of information relating to the operational noise and vibration assessment. It is designed to communicate visually the assessment process from the prediction of impacts to the determination of likely residual significant effects. The corresponding text is included in Vol2 and Vol5.

Key items on the map include the following:

- The Proposed Scheme (the proposed railway alignments and surrounding associated earthworks/roads);
- blue and green lines representing the wayside airborne noise mitigation measures included in the Proposed Scheme;
- the study areas, which indicate the areas within which direct sound and vibration impacts of the scheme have been quantitatively assessed;
- the calculated direct operational impacts of the scheme, displayed as colour-coded buildings and symbols representing buildings that would potentially qualify for noise insulation;
- sound contours representing sound produced by the new railway (displayed in a simpler manner than on SV-01 in order not to obscure other features on the map series);
- the assessment locations at which a quantitative prediction of sound and impacts have been carried out (representing a number of nearby buildings). These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004; and
- labels indicating where the likely residual direct noise or vibration significant effects have been identified. These are labelled with a unique reference number to enable cross-reference to further detail regarding the assessments in Volume 5: Appendix SV-004.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

Main Map Legend	
Route in tunnel	Map sheets included in this community forum
Route on surface	Map sheets not included in this community forum
Depot, station, headhouse or portal building	
Community forum boundary	
Existing railway station	
County boundary	
District/Borough boundary	

Map Number	SV-02-INDEX-CFA15
Map Name	Index Map of: Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)
	Community Forum Area CFA15: Greatworth to Lower Boddington

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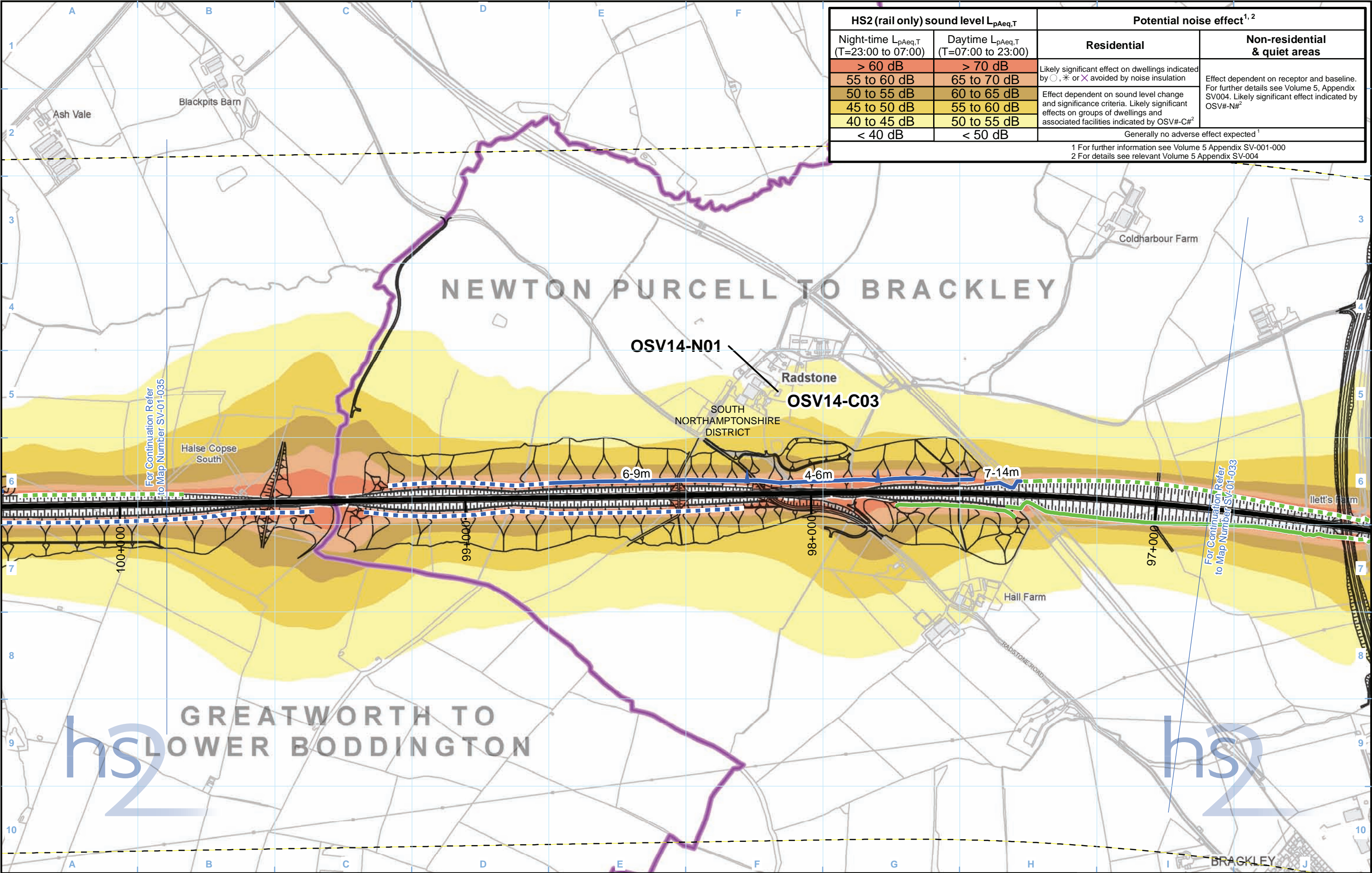
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Doc Number: C250-ARP-EV-MAP-000-004097--P04.00

Date: 29/10/13

Scale at A3: 1:80,000





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Map NumberSV-01-034b

Map NameOperational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA15: Greatworth to Lower Boddington

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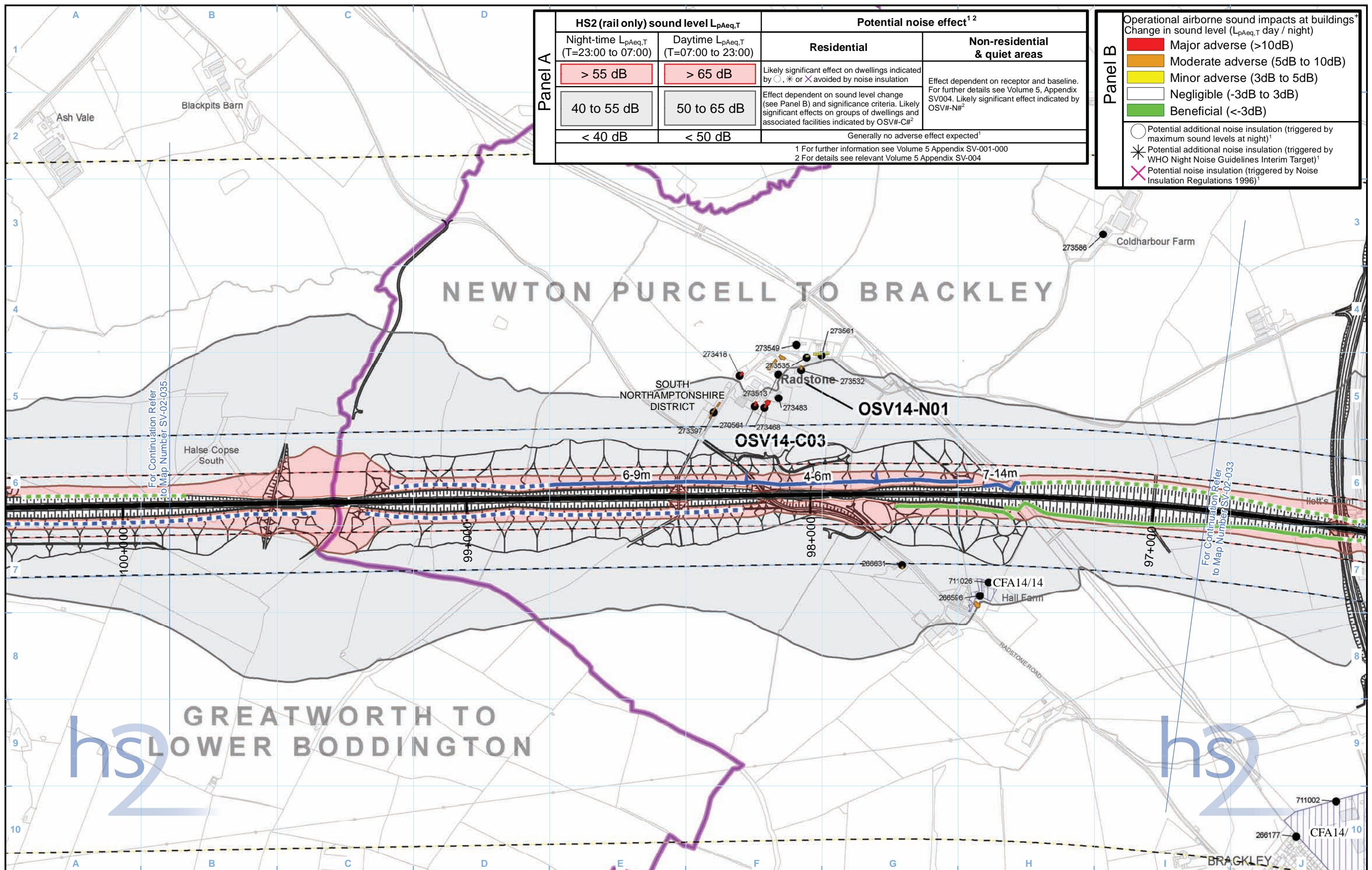
Doc Number: C250-ARP-EV-MAP-000-003580

Scale at A3: 1:10,000

Date: 29/10/13

\* Labelled with total barrier height above rail level





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

**Map Number**  
SV-02-034b

**Map Name**  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

**Community Forum Area CFA15:**  
Greatworth to Lower Boddington

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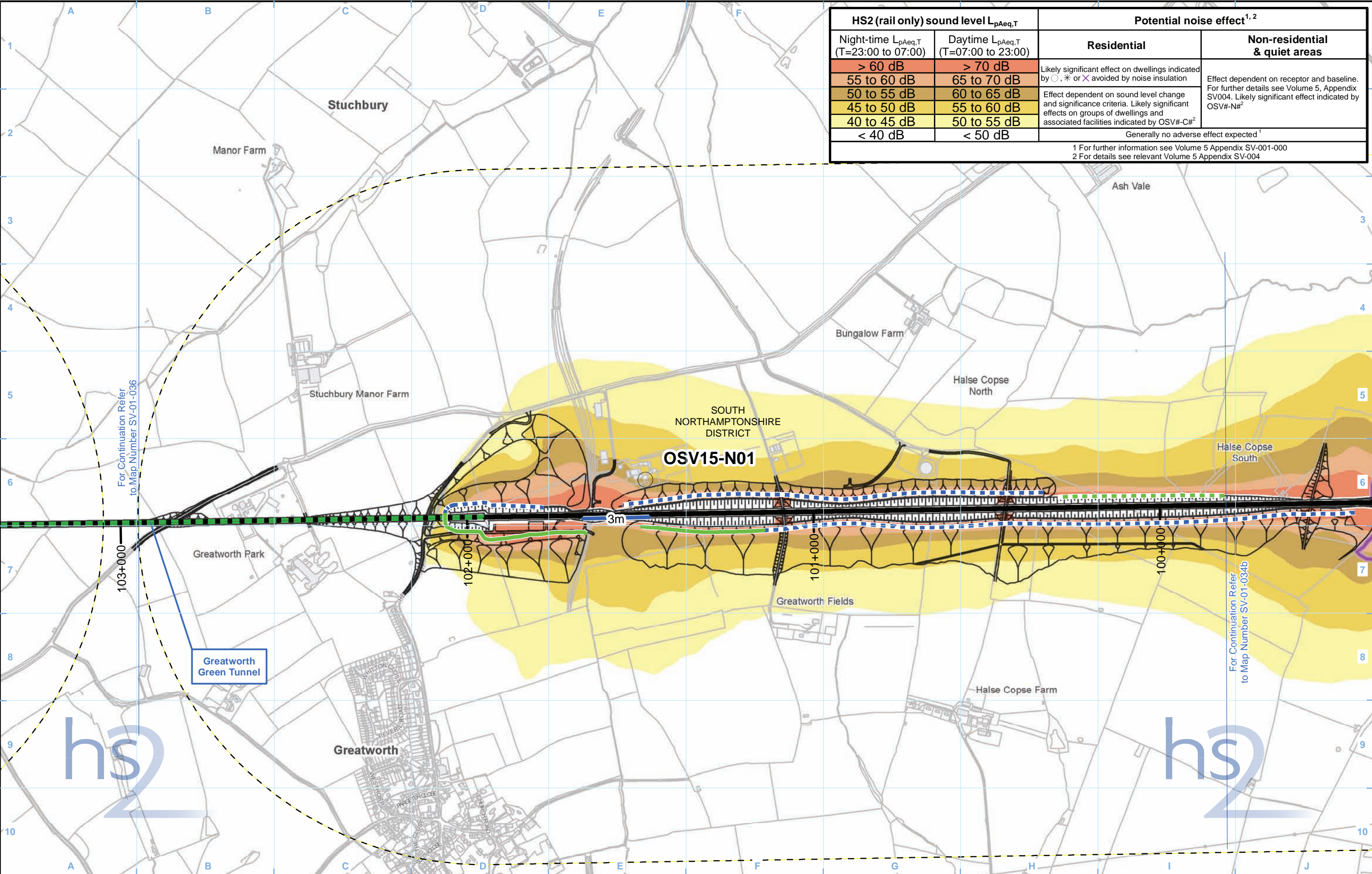
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**Doc Number:** C250-ARP-EV-MAP-000-003690

**Date:** 31/10/13

**Scale at A3:** 1:10,000





HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number  
**SV-01-035**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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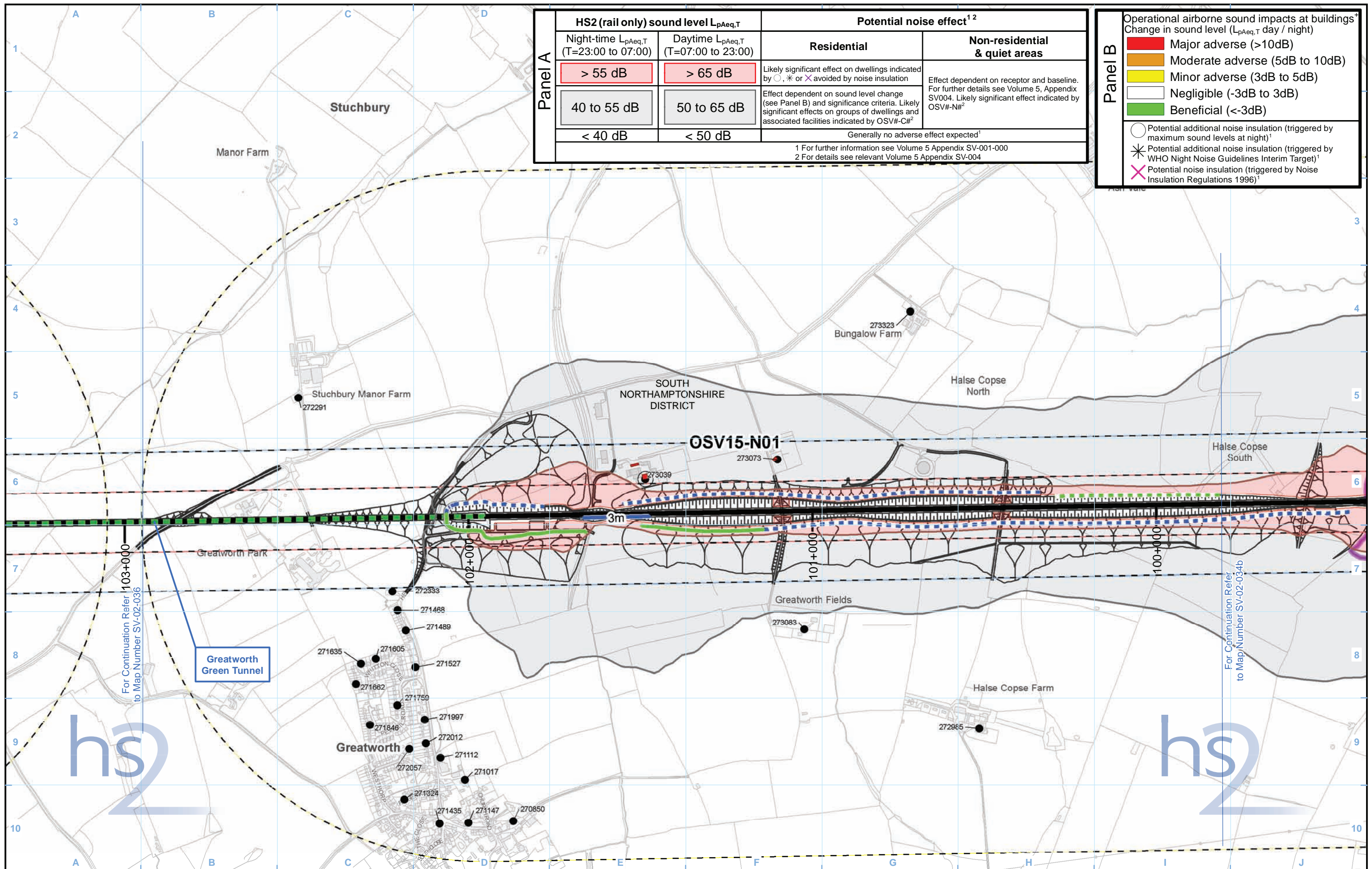
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Doc Number: C250-ARP-EV-MAP-000-003581

Scale at A3: 1:10,000

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-035

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA15: Greatworth to Lower Boddington

hs2

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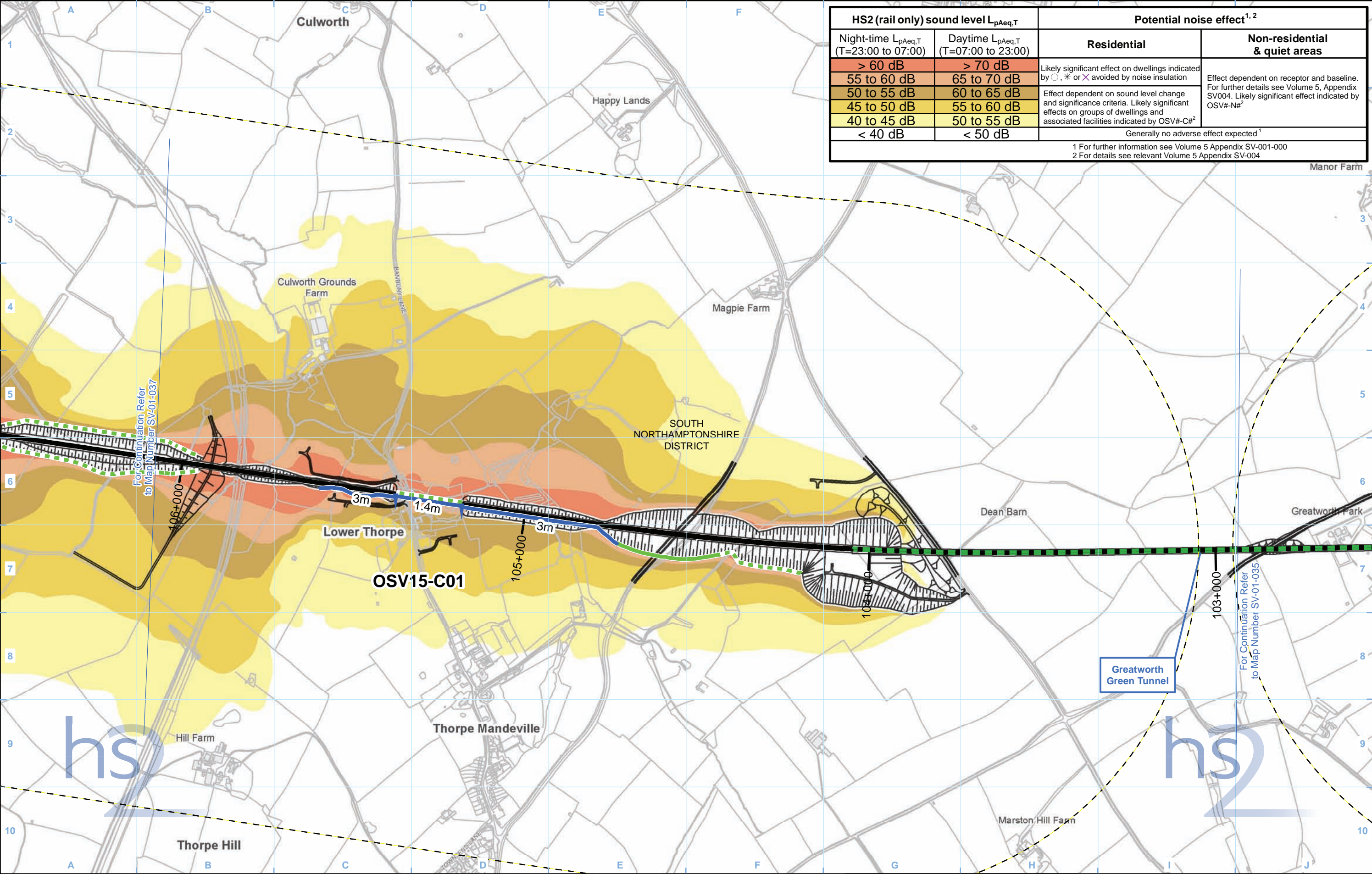
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting
- Legend - Sound related features
- Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

Other environmental e.g. landscaping

Engineering e.g. cuttings

Airborne sound study area

Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-036

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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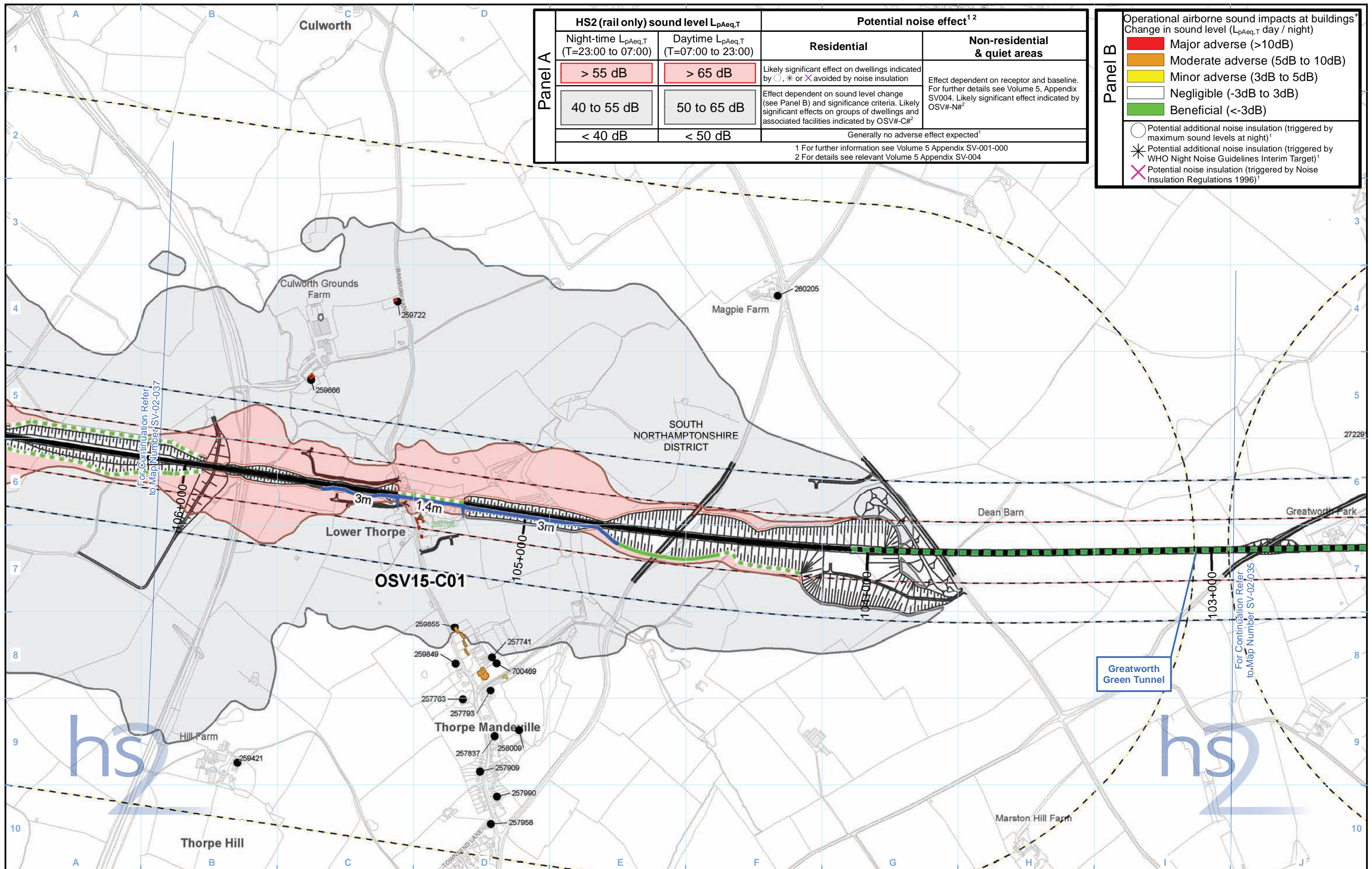
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Scale at A3: 1:10,000

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Metres

Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
- Engineering e.g. cuttings (green tunnels separately marked)
- Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

**Map Number**  
SV-02-036

**Map Name**  
Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

**Community Forum Area CFA15:**  
Greatworth to Lower Boddington

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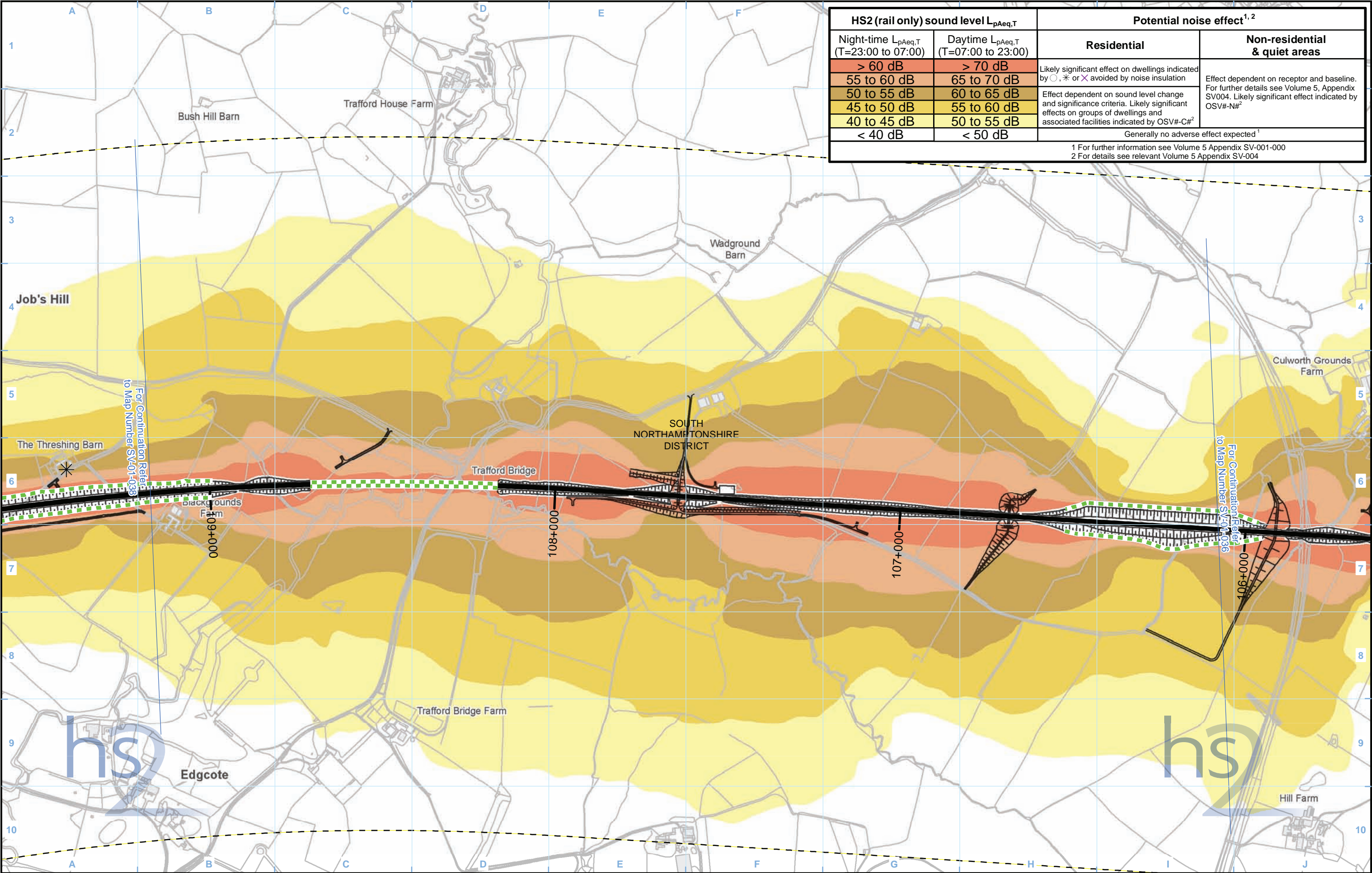
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**Date:** 31/10/13

**Scale at A3:** 1:10,000





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	Generally no adverse effect expected <sup>1</sup>
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

Legend - General features

- Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

Other environmental e.g. landscaping

Engineering e.g. cuttings
- Airborne sound study area

Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>
- \* Labelled with total barrier height above rail level

Map Number

SV-01-037

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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0

100

200

300

400

Metres

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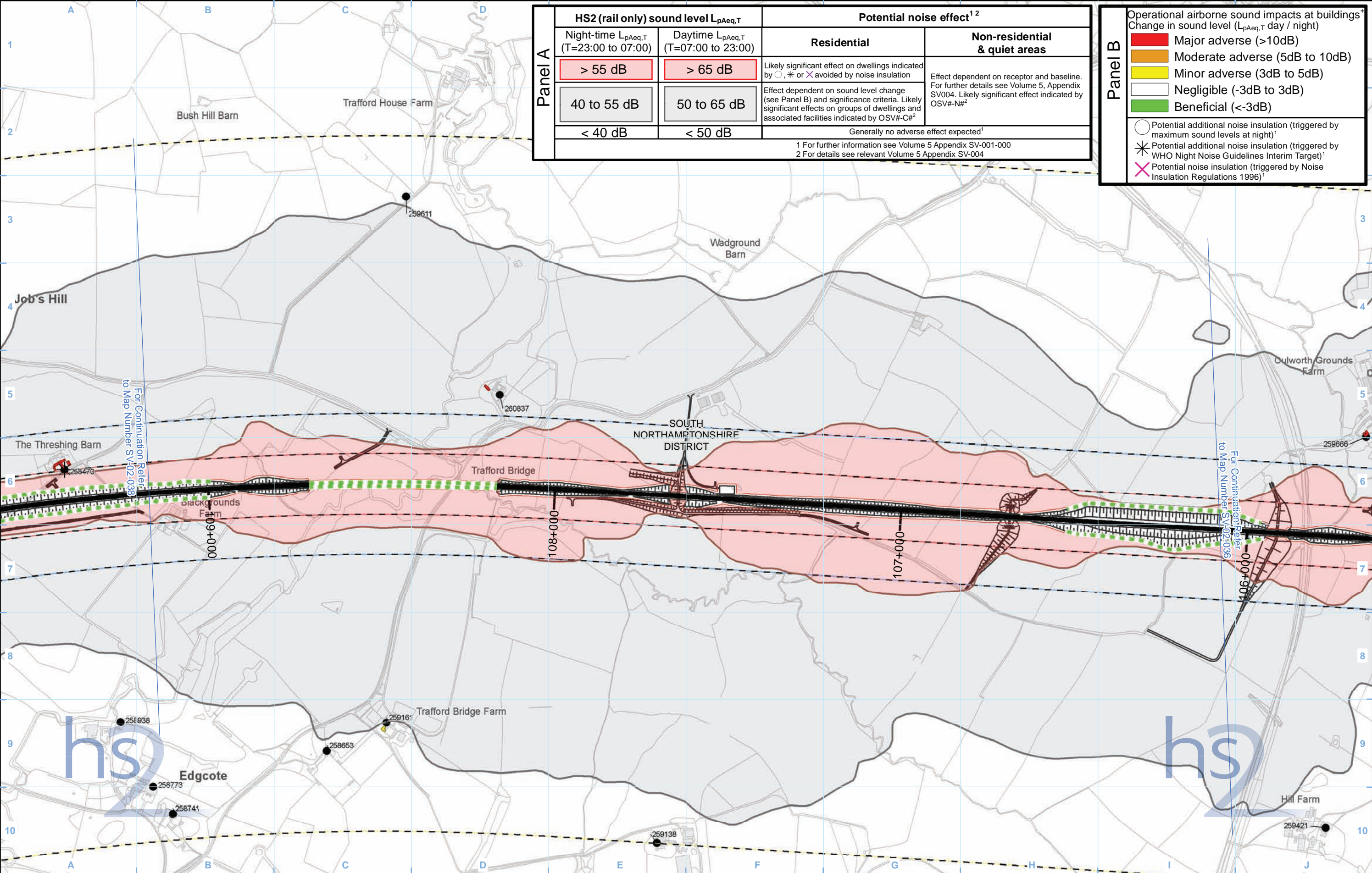
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Date: 29/10/13





Panel A	HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1 2</sup>	
	Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B	Operational airborne sound impacts at buildings <sup>+</sup> Change in sound level ( $L_{pAeq,T}$ day / night)	
	Major adverse (>10dB)	
	Moderate adverse (5dB to 10dB)	
	Minor adverse (3dB to 5dB)	
	Negligible (-3dB to 3dB)	
		Beneficial (<-3dB)
		○ Potential additional noise insulation (triggered by maximum sound levels at night) <sup>1</sup>
		✱ Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target) <sup>1</sup>
		✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996) <sup>1</sup>

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks: Non engineering earthworks:

- Embankment
- Cutting
- Embankment
- Cutting

\* Residential buildings only  
\* Labelled with total barrier height above rail level

Legend - Sound related features

- Committed developments (label as CFA#/#)
- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental features e.g. landscaping
  - Engineering e.g. cuttings
- Airborne sound study area

- Ground-borne sound & vibration study area (residential and non-residential)
- Ground-borne sound & vibration study area (highly sensitive non-residential)
- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Minor ground-borne noise or vibration impact\*

Map Number

SV-02-037

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA15: Greatworth to Lower Boddington



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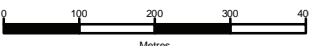
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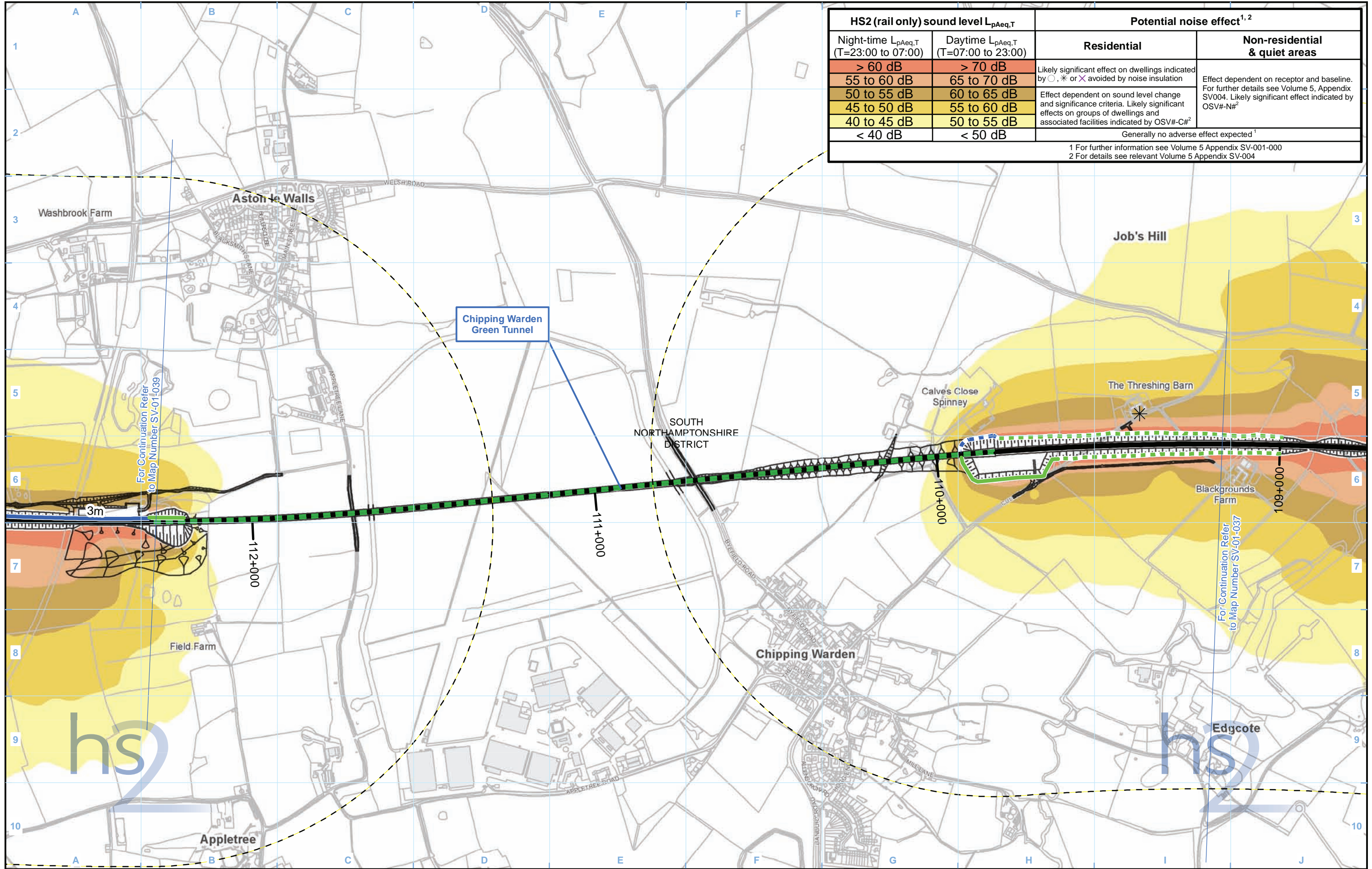


Scale at A3: 1:10,000



Date: 31/10/13





HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB		
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
1 For further information see Volume 5 Appendix SV-001-000			
2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Map Number  
**SV-01-038**

Map Name  
**Operational Sound Contour Maps and Likely Significant Effects**

Community Forum Area CFA15:  
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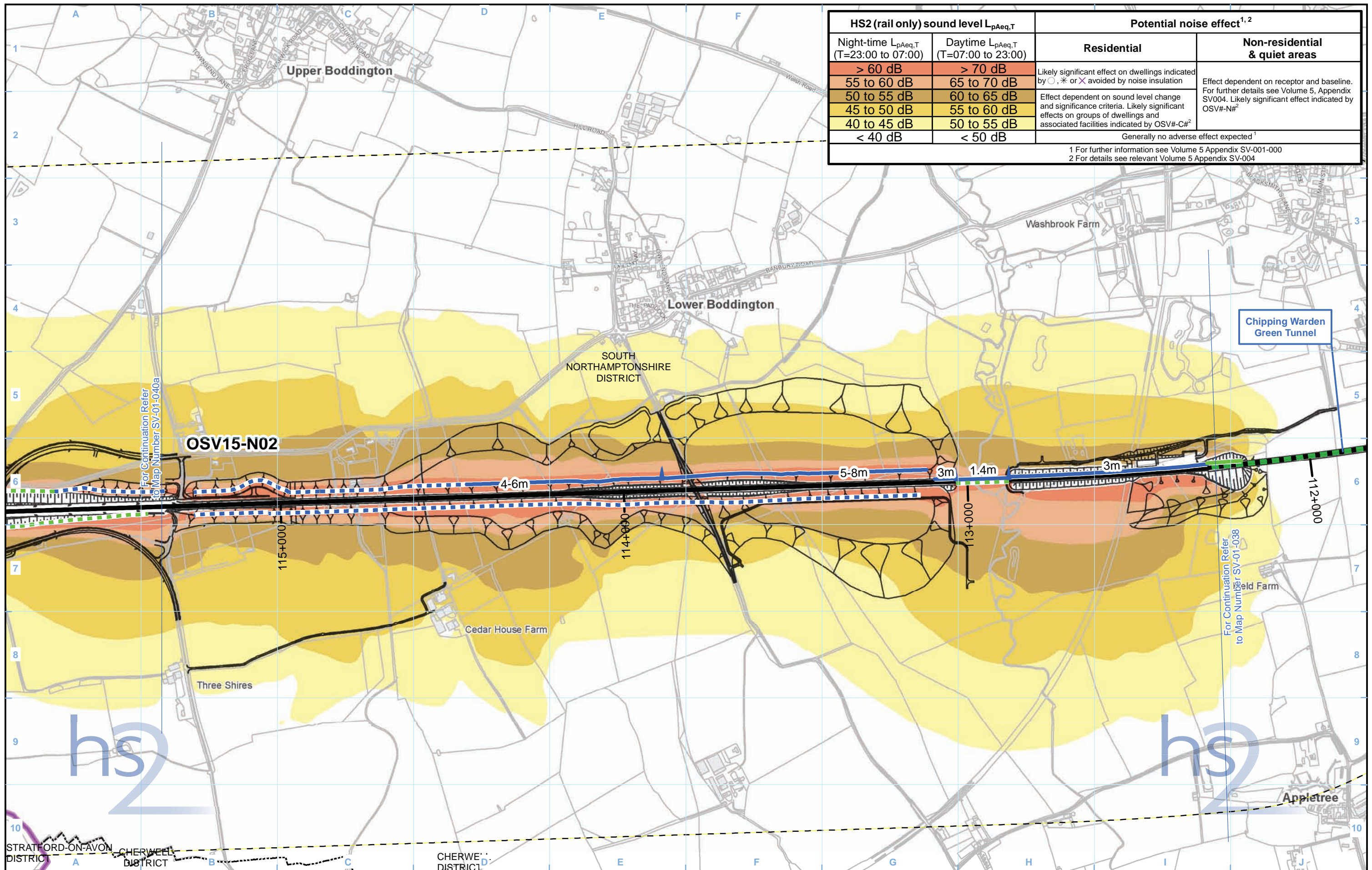
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Date: 29/10/13









HS2 (rail only) sound level $L_{pAeq,T}$		Potential noise effect <sup>1, 2</sup>	
Night-time $L_{pAeq,T}$ (T=23:00 to 07:00)	Daytime $L_{pAeq,T}$ (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	Generally no adverse effect expected <sup>1</sup>
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		

1 For further information see Volume 5 Appendix SV-001-000  
2 For details see relevant Volume 5 Appendix SV-004

Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Envisaged mitigation to avoid / reduce significant noise effects:
- Landscaping and/or fence barriers\*
- Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
- Other environmental e.g. landscaping
- Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map Number

SV-01-039

Map Name

Operational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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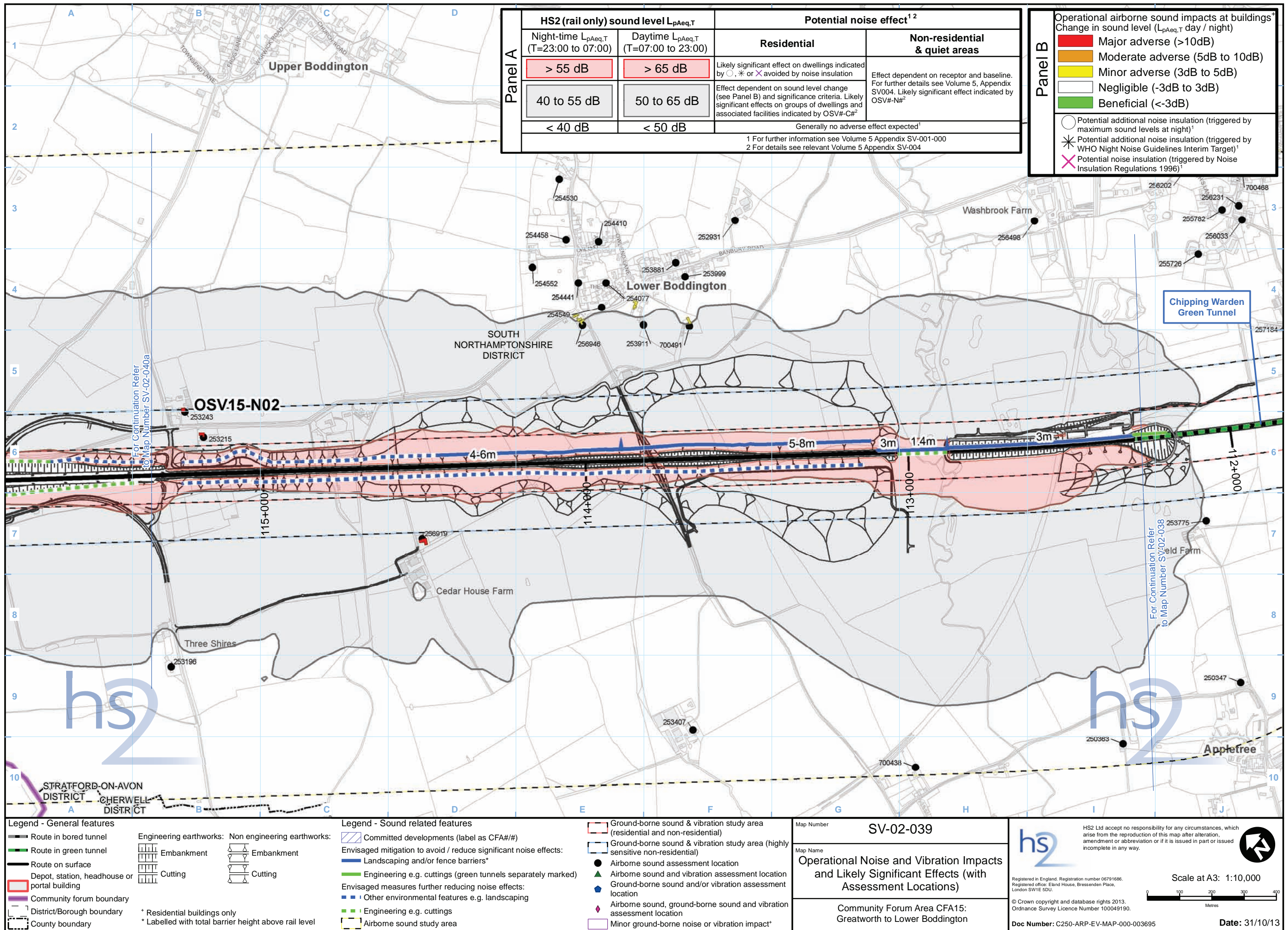
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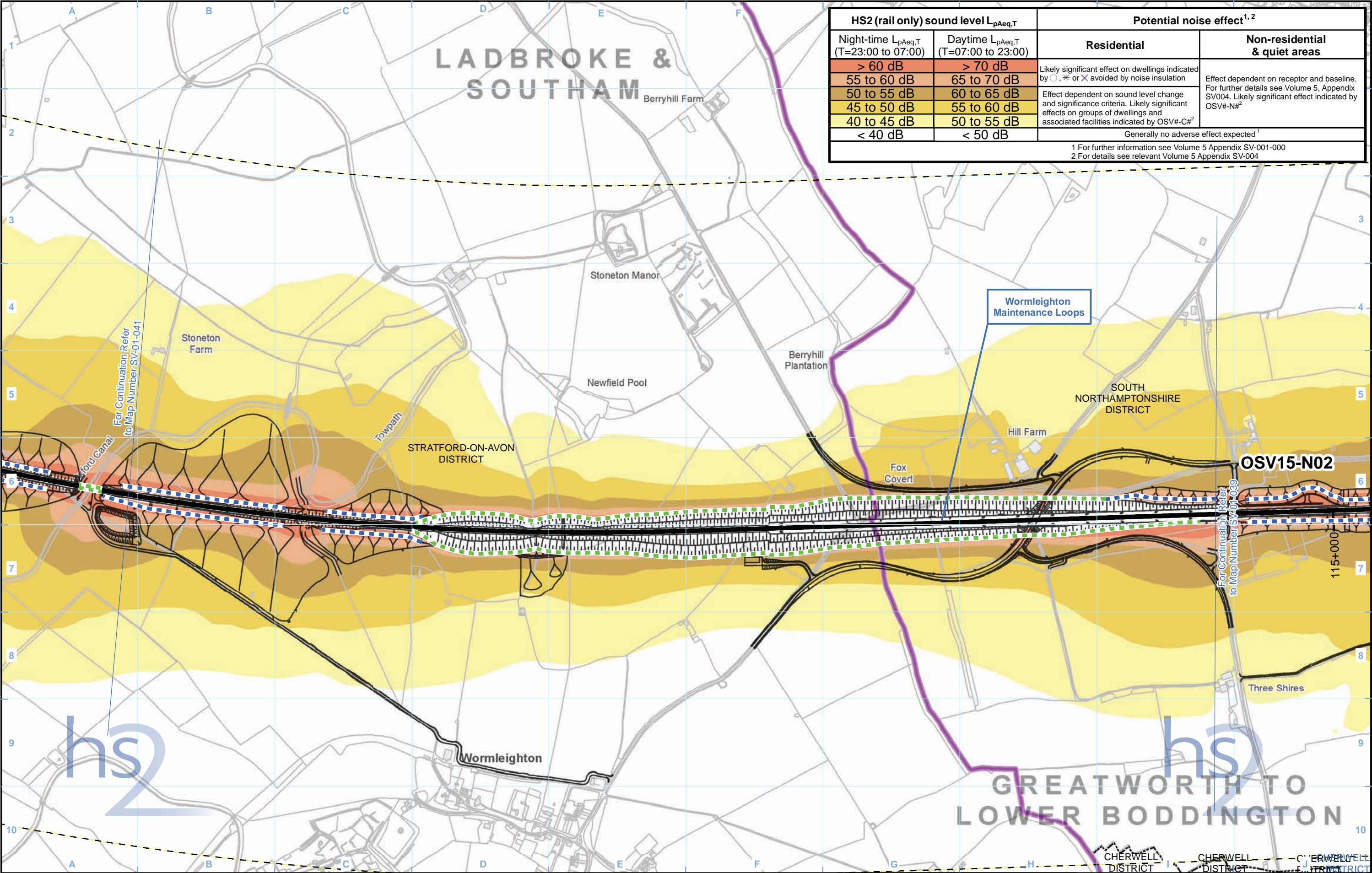
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Date: 29/10/13









HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1, 2</sup>	
Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
> 60 dB	> 70 dB	Likely significant effect on dwellings indicated by ○, ✱ or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
55 to 60 dB	65 to 70 dB		
50 to 55 dB	60 to 65 dB	Effect dependent on sound level change and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
45 to 50 dB	55 to 60 dB		
40 to 45 dB	50 to 55 dB		
< 40 dB	< 50 dB		
Generally no adverse effect expected <sup>1</sup>			
1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Envisaged mitigation to avoid / reduce significant noise effects:
  - Landscaping and/or fence barriers\*
  - Engineering e.g. cuttings (green tunnels separately marked)
- Envisaged measures further reducing noise effects:
  - Other environmental e.g. landscaping
  - Engineering e.g. cuttings

- Airborne sound study area
- Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>
- Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>
- Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

\* Labelled with total barrier height above rail level

Map NumberSV-01-040a

Map NameOperational Sound Contour Maps and Likely Significant Effects

Community Forum Area CFA15: Greatworth to Lower Boddington

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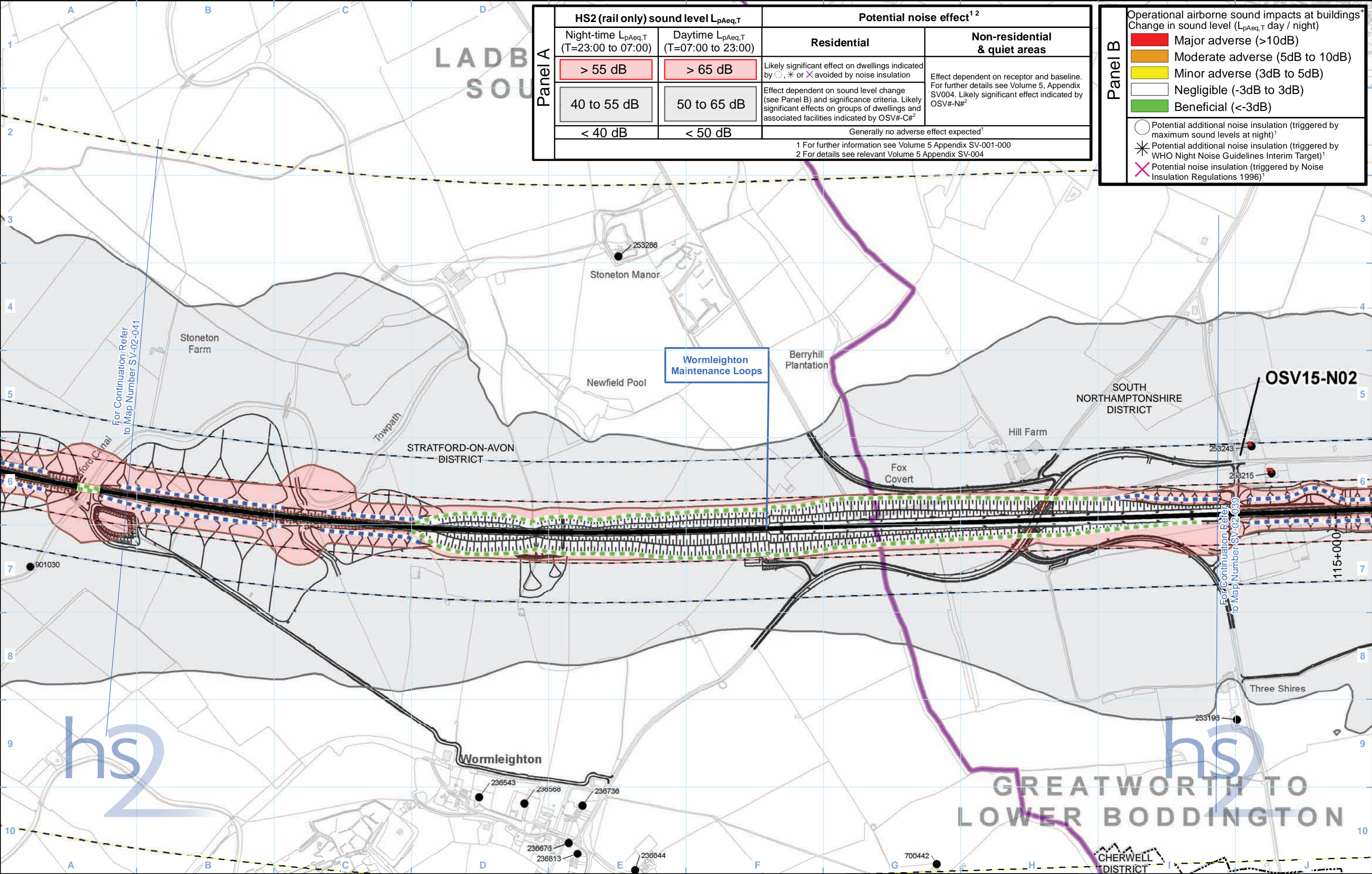
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Scale at A3: 1:10,000

Metres

Date: 29/10/13





Panel A	HS2 (rail only) sound level L <sub>pAeq,T</sub>		Potential noise effect <sup>1 2</sup>	
	Night-time L <sub>pAeq,T</sub> (T=23:00 to 07:00)	Daytime L <sub>pAeq,T</sub> (T=07:00 to 23:00)	Residential	Non-residential & quiet areas
	> 55 dB	> 65 dB	Likely significant effect on dwellings indicated by ○, * or ✕ avoided by noise insulation	Effect dependent on receptor and baseline. For further details see Volume 5, Appendix SV004. Likely significant effect indicated by OSV#-N# <sup>2</sup>
	40 to 55 dB	50 to 65 dB	Effect dependent on sound level change (see Panel B) and significance criteria. Likely significant effects on groups of dwellings and associated facilities indicated by OSV#-C# <sup>2</sup>	
	< 40 dB	< 50 dB	Generally no adverse effect expected <sup>1</sup>	
	1 For further information see Volume 5 Appendix SV-001-000 2 For details see relevant Volume 5 Appendix SV-004			

Panel B

Operational airborne sound impacts at buildings\*  
Change in sound level (L<sub>pAeq,T</sub> day / night)

Major adverse (>10dB)

Moderate adverse (5dB to 10dB)

Minor adverse (3dB to 5dB)

Negligible (-3dB to 3dB)

Beneficial (<-3dB)

○ Potential additional noise insulation (triggered by maximum sound levels at night)<sup>1</sup>

\* Potential additional noise insulation (triggered by WHO Night Noise Guidelines Interim Target)<sup>1</sup>

✕ Potential noise insulation (triggered by Noise Insulation Regulations 1996)<sup>1</sup>

Legend - General features

Route in bored tunnel

Route in green tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

District/Borough boundary

County boundary

Engineering earthworks:

Embankment

Cutting

Non engineering earthworks:

Embankment

Cutting

\* Residential buildings only

\* Labelled with total barrier height above rail level

Legend - Sound related features

Committed developments (label as CFA#/#)

Envisaged mitigation to avoid / reduce significant noise effects:

Landscaping and/or fence barriers\*

Engineering e.g. cuttings (green tunnels separately marked)

Envisaged measures further reducing noise effects:

Other environmental features e.g. landscaping

Engineering e.g. cuttings

Airborne sound study area

Ground-borne sound & vibration study area (residential and non-residential)

Ground-borne sound & vibration study area (highly sensitive non-residential)

Airborne sound assessment location

Airborne sound and vibration assessment location

Ground-borne sound and/or vibration assessment location

Airborne sound, ground-borne sound and vibration assessment location

Minor ground-borne noise or vibration impact\*

Map Number

SV-02-040a

Map Name

Operational Noise and Vibration Impacts and Likely Significant Effects (with Assessment Locations)

Community Forum Area CFA15: Greatworth to Lower Boddington

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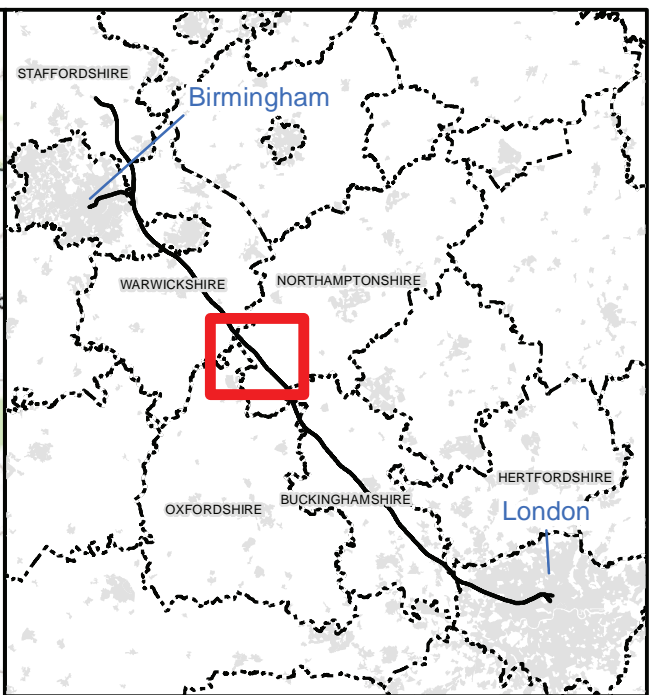
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Date: 31/10/13





**Map Series Information:**

The SV-03 figure series accompanies the construction noise & vibration assessments. It shows the locations at which a quantitative assessment of the direct effects of construction noise and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the construction noise and vibration reports contained in Volume 5: Appendix SV-003 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- Existing railway station
- County boundary
- District/Borough boundary

- Map sheets included in this community forum
- Map sheets not included in this community forum

Map Number: SV-03-INDEX-CFA15

Map Name: Index Map of:  
Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration Assessments

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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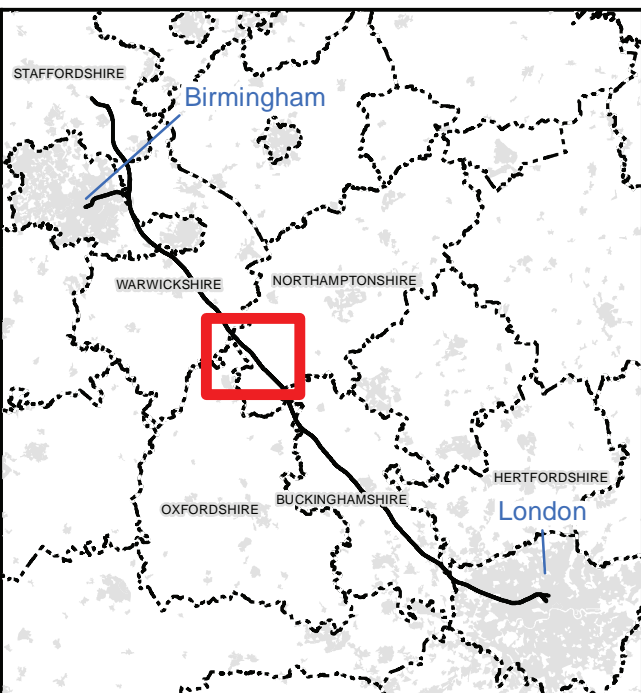
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**Map Series Information:**

The SV-04 figure series shows the locations at which a quantitative assessment of the direct effects of operational sound and/or vibration has been carried out. These are labelled as assessment locations with a reference number to enable cross-reference to the operational sound and vibration reports contained in Volume 5: Appendix SV-004 and Volume 5: Appendix SV-002.

The figure series also shows locations at which baseline sound measurements were carried out. These baseline measurement locations are labelled with a reference number to enable cross-reference to the baseline sound reports contained in Volume 5: Appendix SV-002.

A more detailed explanation of each legend item included on the figures can be found in the data dictionary.

Note: Not all data layers in the legend are represented on every map.

**Main Map Legend**

Route in tunnel

Route on surface

Depot, station, headhouse or portal building

Community forum boundary

Existing railway station

County boundary

District/Borough boundary

Map sheets included in this community forum

Map sheets not included in this community forum

Map Number

SV-04-INDEX-CFA15

Map Name

Index Map of:  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration Assessments

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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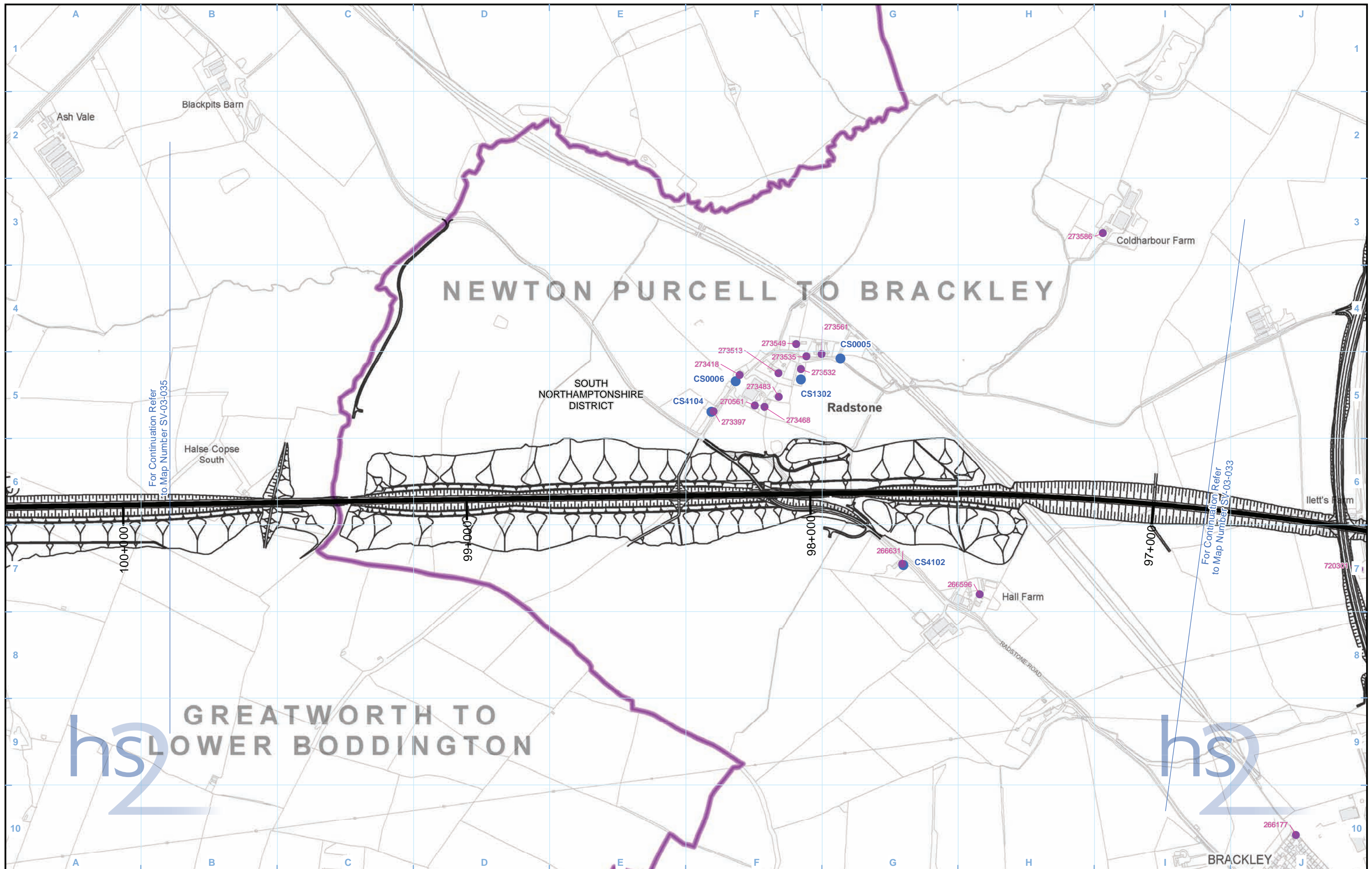
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Metres

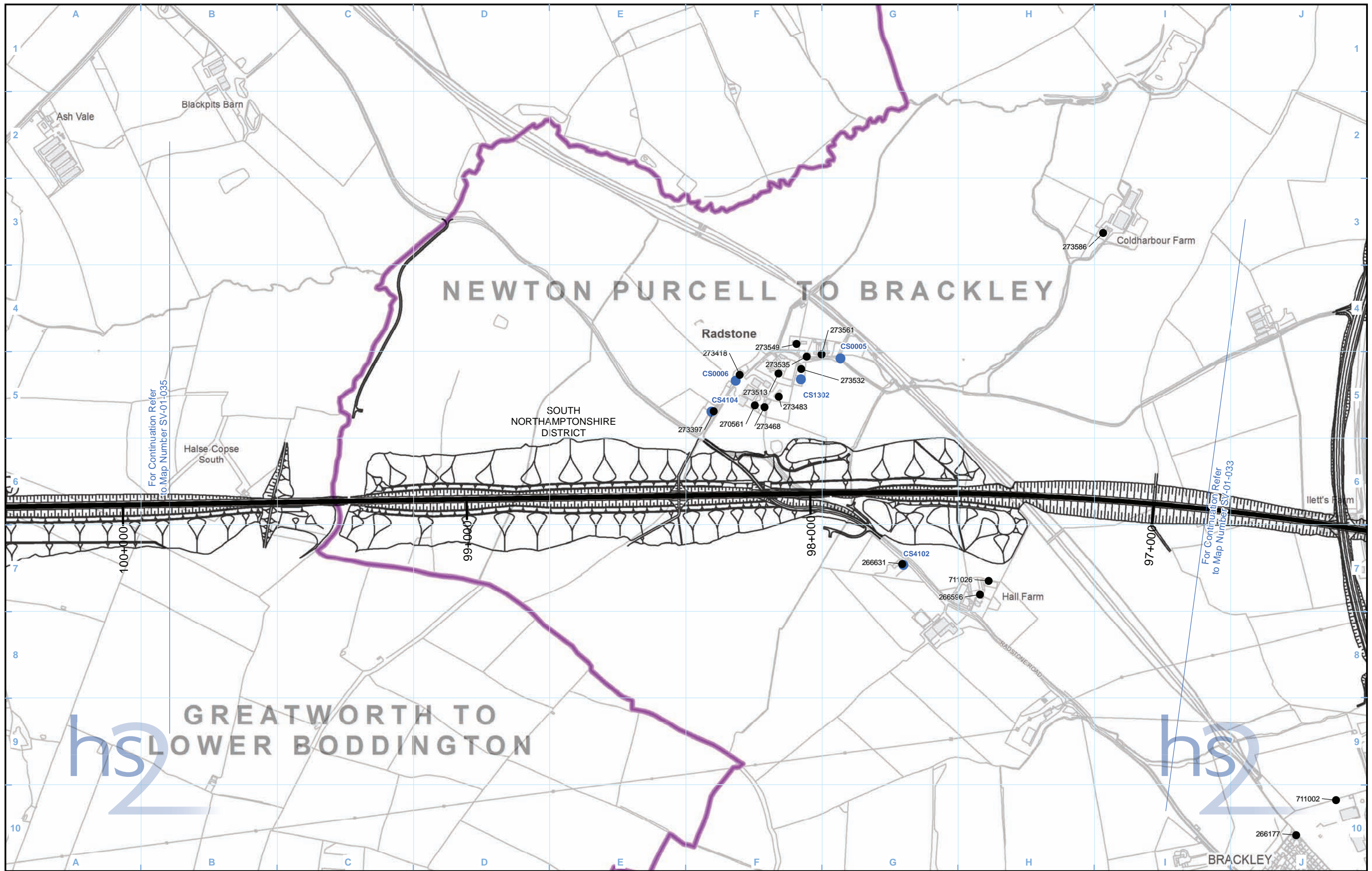
Date: 29/10/13





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-03-034b</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Doc Number: C250-ARP-EV-MAP-000-003791</p>
					Map Name <b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>	
					Community Forum Area CFA15: Greatworth to Lower Boddington	<p>Date: 29/10/13</p>





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

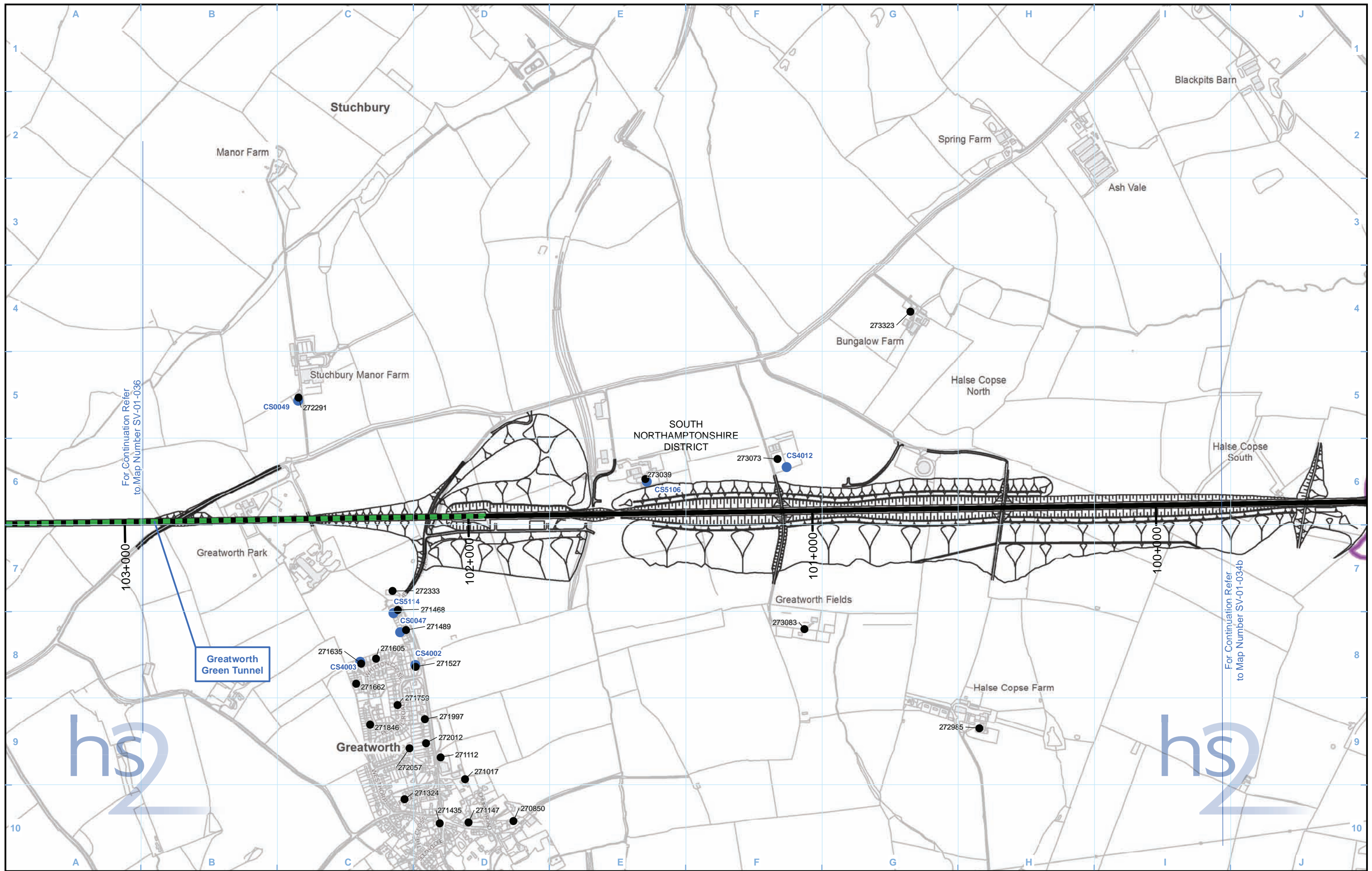
Map Number	SV-04-034b
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA15: Greatworth to Lower Boddington	

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<small>Doc Number: C250-ARP-EV-MAP-000-003892</small>	
Date: 29/10/13	



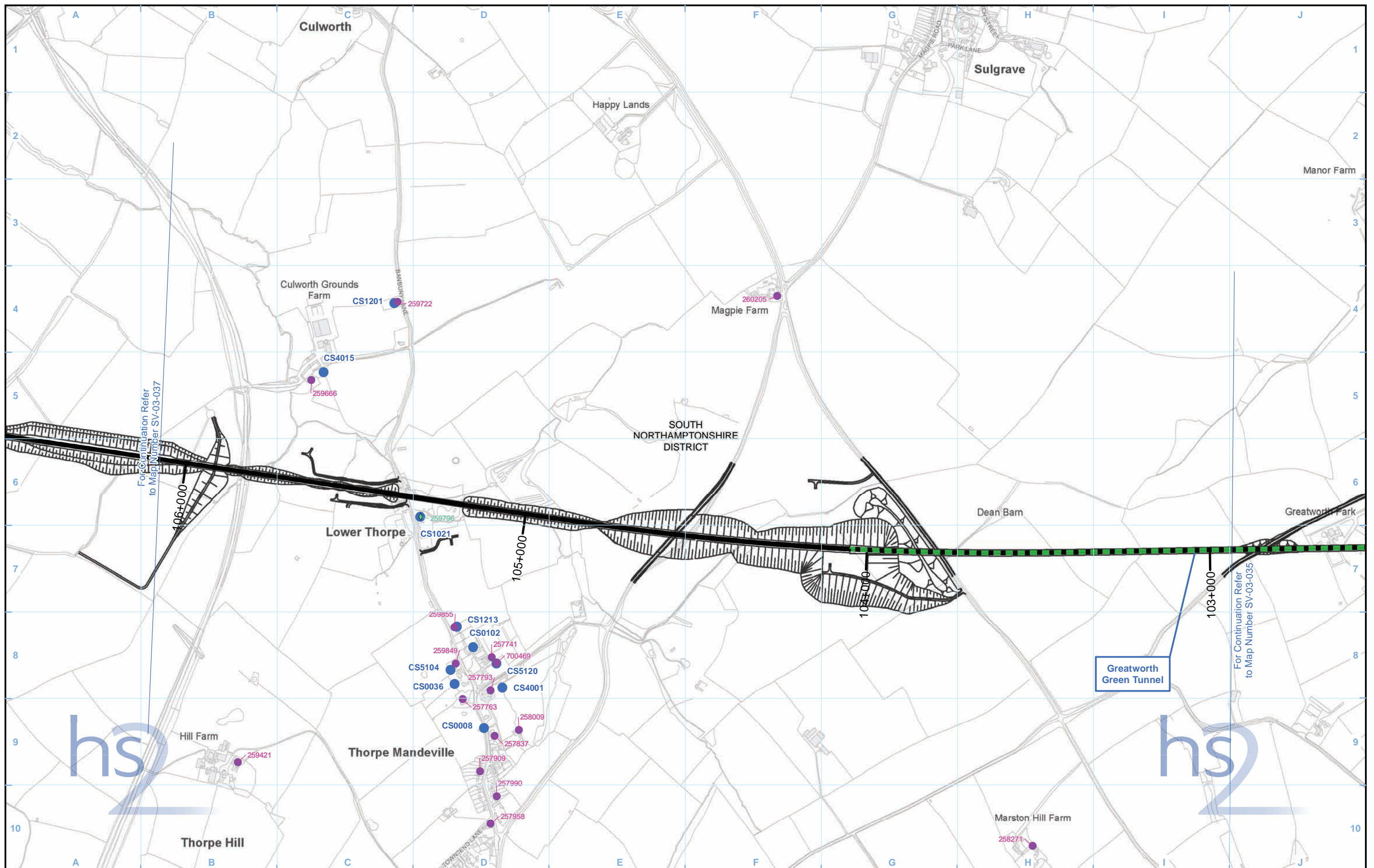













<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Airborne sound assessment location</li><li>Airborne sound and vibration assessment location</li><li>Ground-borne sound and/or vibration assessment location</li><li>Airborne sound, ground-borne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see Vol 5 Appendix SV004)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-04-035</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p><b>Doc Number:</b> C250-ARP-EV-MAP-000-003893 <b>Date:</b> 29/10/13</p>
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>			Map Name <b>Assessment and Monitoring Locations for Operational Sound, Noise &amp; Vibration Assessments</b>	
Community Forum Area CFA15: Greatworth to Lower Boddington						







Legend - General features

-  Route in bored tunnel
-  Route in green tunnel
-  Route on surface
-  Depot, station, headhouse or portal building
-  Community forum boundary
-  District/Borough boundary
-  County boundary

Engineering earthworks:

-  Embankment  
 Cutting

Non engineering earthworks:

- 
- Embankment
- Cutting

Legend - Sound related features

- Construction airborne sound assessment location
- ⬡ Construction vibration assessment locations
- ◆ Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix  
SV-003)

(labelled with Measurement Location reference code)

Map Number

SV-03-036

Map Name

Assessment and Monitoring Locations for  
Construction Sound, Noise & Vibration  
Assessments

Community Forum Area CFA15:  
Greatworth to Lower Boddington



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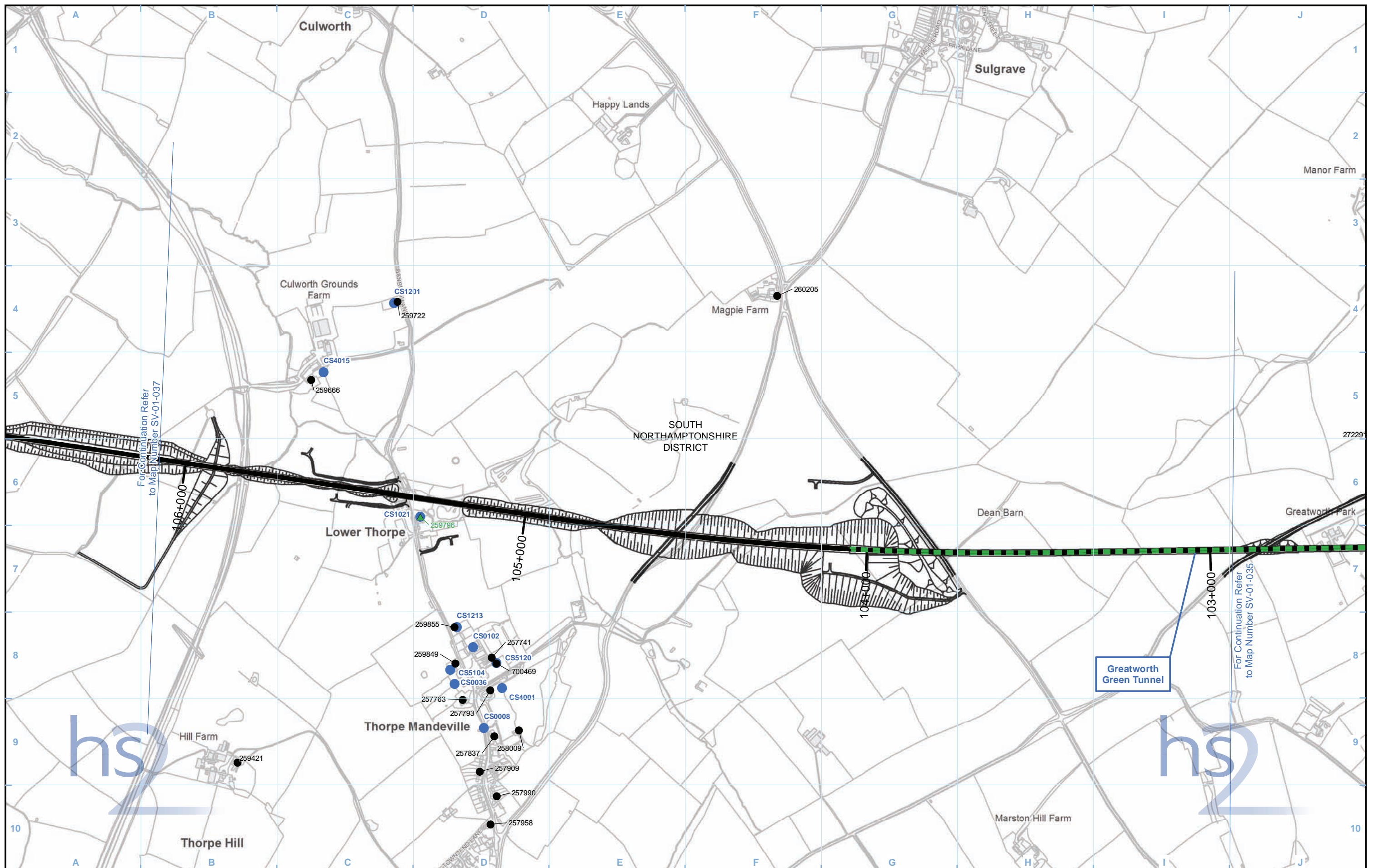
Doc Number: C250-ARP-EV-MAP-000-003793

Scale at A3: 1:10,000














Date: 29/10/13





Legend - General features

- |  |  |  |  |
|--|--|--|--|
|  | Route in bored tunnel                        | <b>Engineering earthworks:</b>   | <b>Non engineering earthworks:</b>   |
|  | Route in green tunnel                        |  Embankment |  Embankment |
|  | Route on surface                             |  Cutting    |  Cutting    |
|  | Depot, station, headhouse or portal building |  |  |
|  | Community forum boundary                     |  |  |
|  | District/Borough boundary                    |  |  |
|  | County boundary                              |  |  |

Legend - Sound related features

- Airborne sound assessment location
- ▲ Airborne sound and vibration assessment location
- ◆ Ground-borne sound and/or vibration assessment location
- ◆ Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-036
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Map Name  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration  
Assessments

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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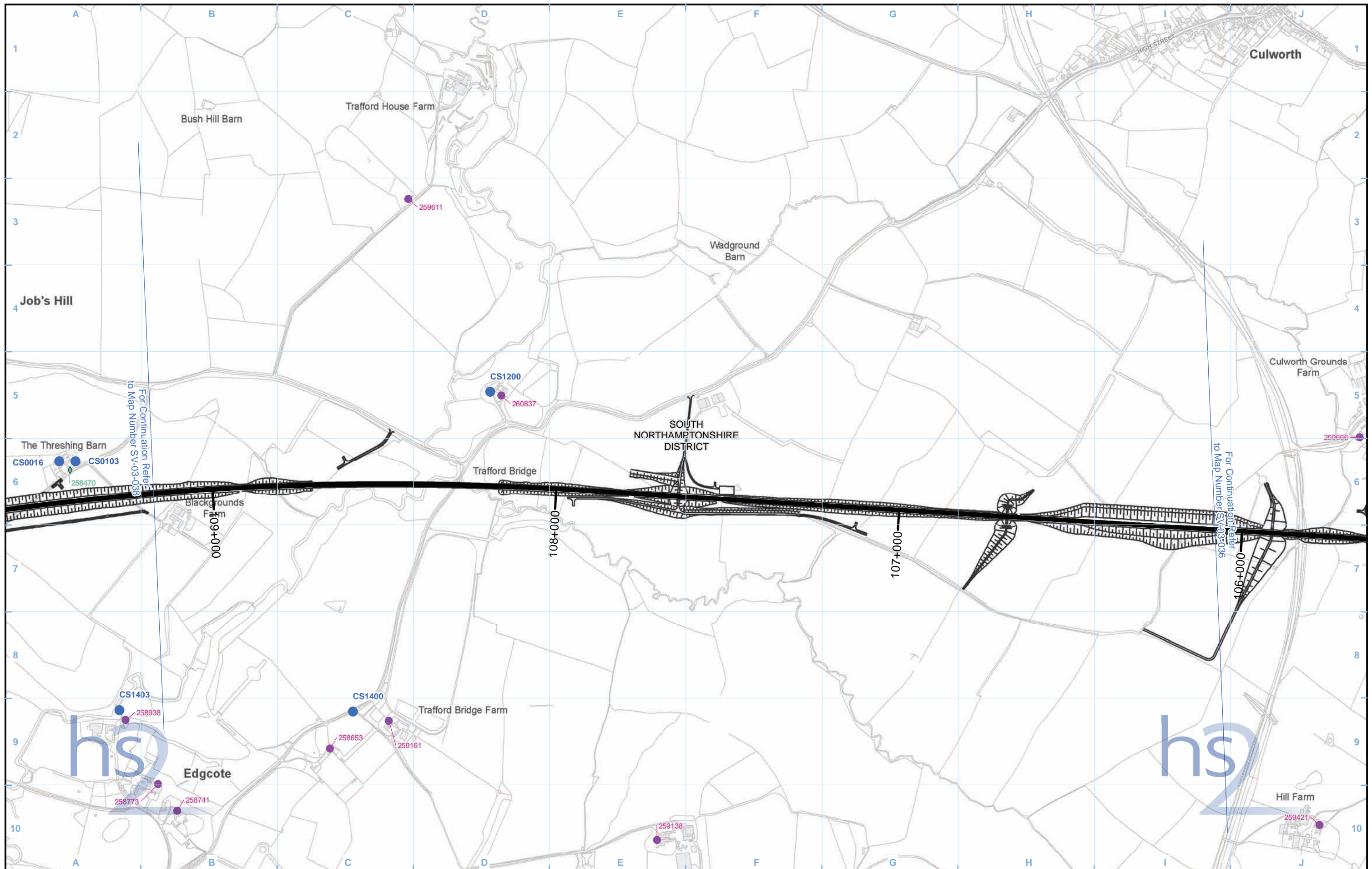
Doc Number: C250-ARP-EV-MAP-000-003894

Scale at A3: 1:10,000



Date: 29/10/13





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Engineering earthworks:<ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul></li><li>Non engineering earthworks:<ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul></li><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>	Map Number <b>SV-03-037</b>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: Eland House, Bressenden Place, London SW1E 5DU.</p> <p>© Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p><b>Date: 29/10/13</b></p>
<b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>					Map Name <b>Assessment and Monitoring Locations for Construction Sound, Noise &amp; Vibration Assessments</b>	





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

labelled with Measurement Location reference code

Map Number	SV-04-037
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA15: Greatworth to Lower Boddington	

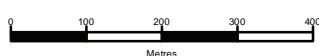


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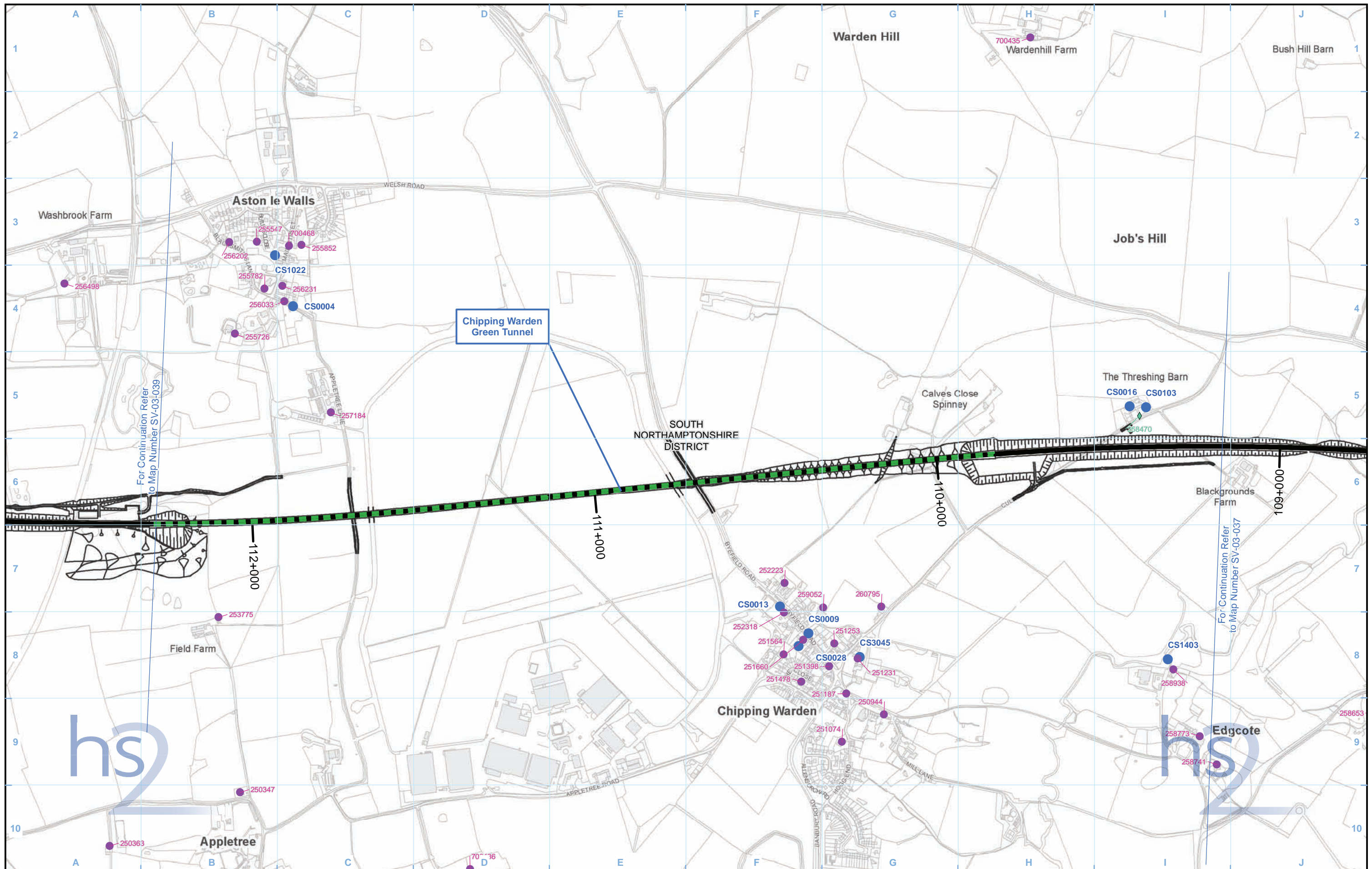
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Doc Number: C250-ARP-EV-MAP-000-003895

Date: 29/10/13





Legend - General features		Legend - Sound related features		labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)	labelled with Measurement Location reference code					
Route in bored tunnel	Route in green tunnel	Route on surface	Depot, station, headhouse or portal building			Community forum boundary	District/Borough boundary	County boundary	Construction airborne sound assessment location	Construction vibration assessment locations

Engineering earthworks:		Non engineering earthworks:	
Embankment	Cutting	Embankment	Cutting

Map Number	SV-03-038
Map Name	Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments
Community Forum Area CFA15: Greatworth to Lower Boddington	

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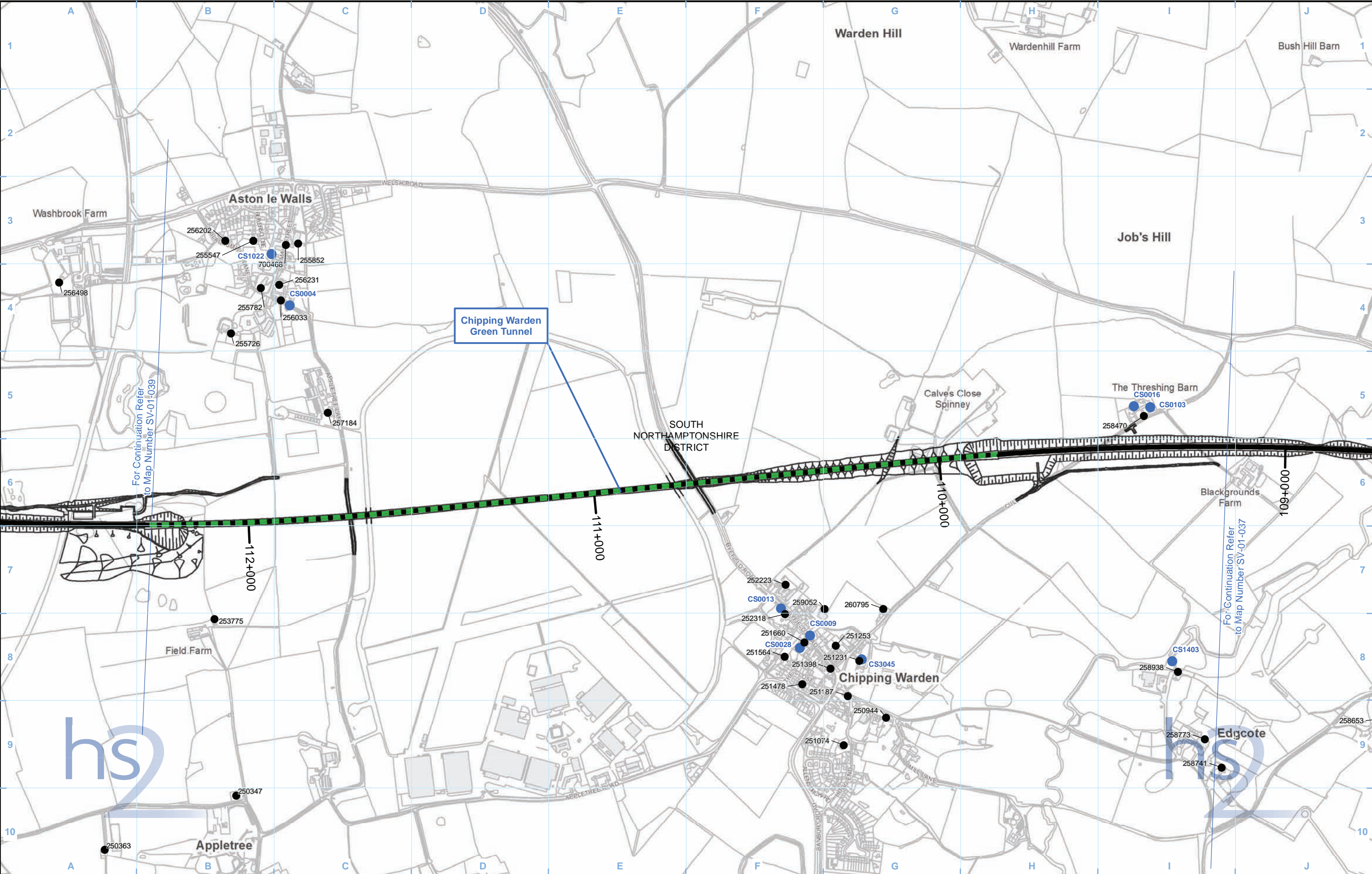
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Doc Number: C250-ARP-EV-MAP-000-003795

Scale at A3: 1:10,000

Date: 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number SV-04-038

Map Name  
Assessment and Monitoring Locations for  
Operational Sound, Noise & Vibration  
Assessments

Community Forum Area CFA15:  
Greatworth to Lower Boddington

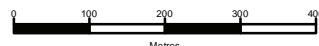


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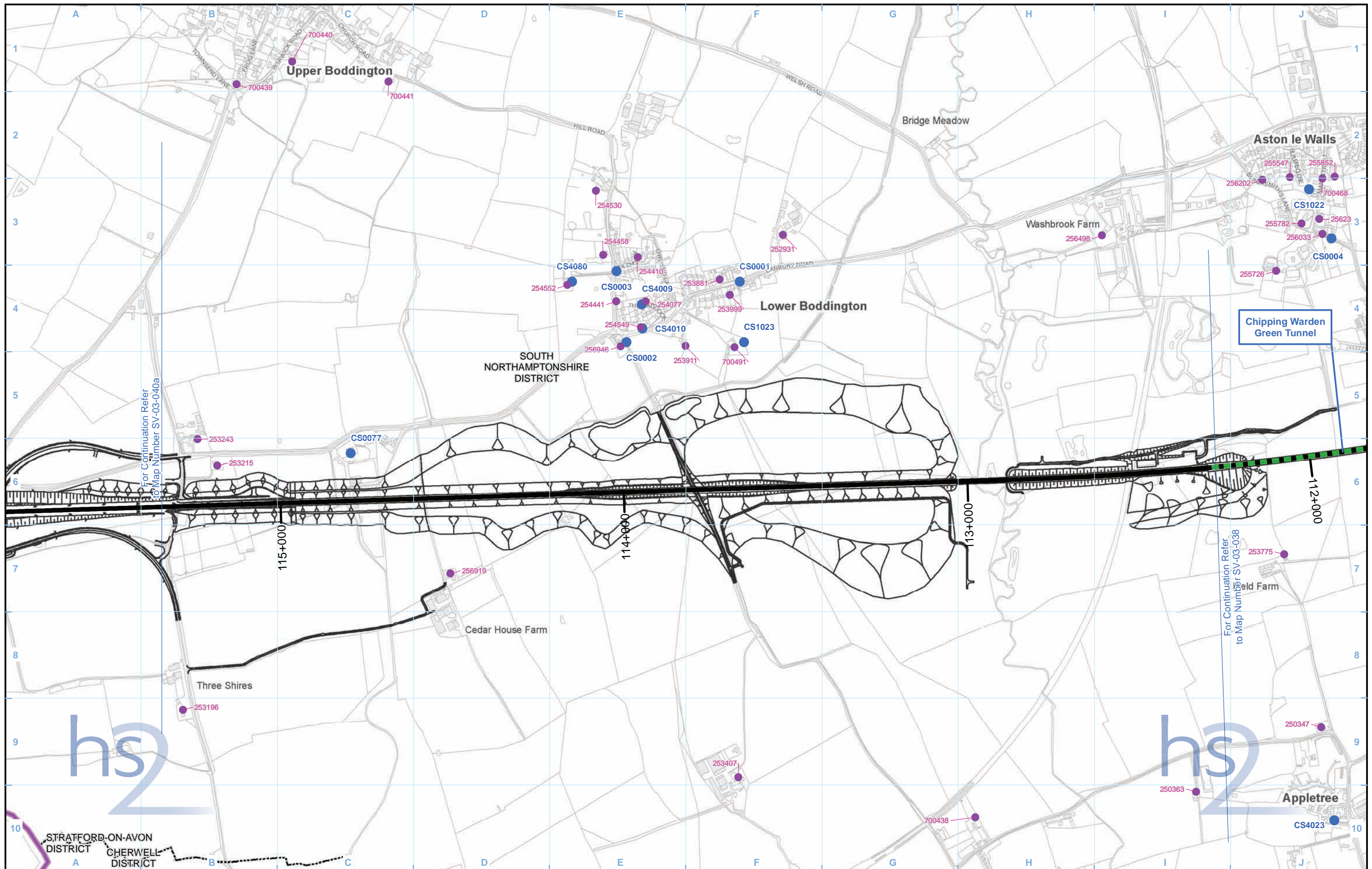
Scale at A3: 1:10,000



Date: 29/10/13







**Legend - General features**

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

**Engineering earthworks:**

- Embankment
- Cutting

**Non engineering earthworks:**

- Embankment
- Cutting

**Legend - Sound related features**

- Construction airborne sound assessment location
- Construction vibration assessment locations
- Construction airborne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see relevant Vol 5 Appendix SV-003)

labelled with Measurement Location reference code

Map Number

**SV-03-039**

Map Name

**Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments**

Community Forum Area CFA15:  
Greatworth to Lower Boddington

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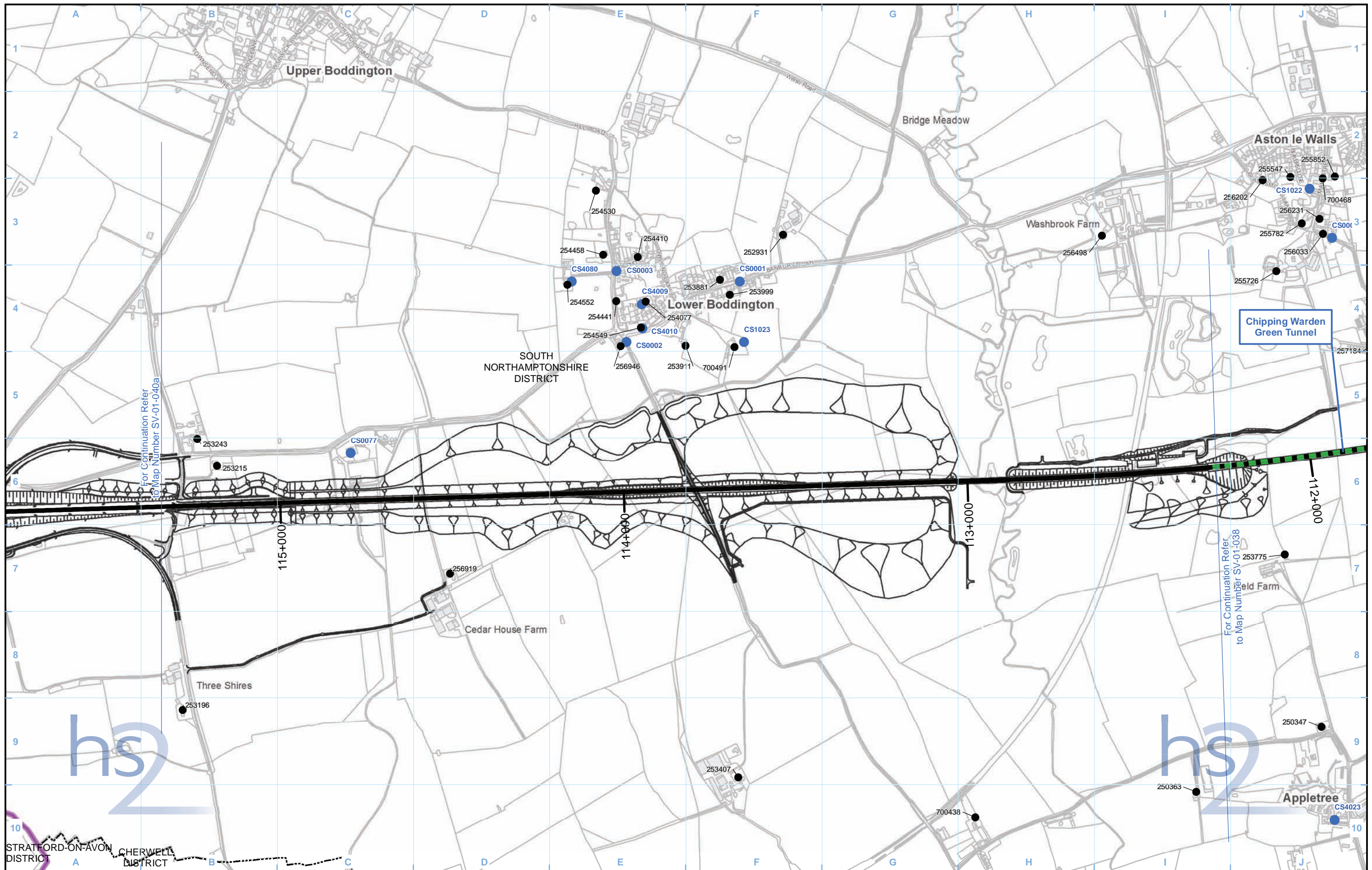
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0 100 200 300 400 Metres

**Date:** 29/10/13





Legend - General features

- Route in bored tunnel
- Route in green tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community forum boundary
- District/Borough boundary
- County boundary

Engineering earthworks:

- Embankment
- Cutting

Non engineering earthworks:

- Embankment
- Cutting

Legend - Sound related features

- Airborne sound assessment location
- Airborne sound and vibration assessment location
- Ground-borne sound and/or vibration assessment location
- Airborne sound, ground-borne sound and vibration assessment location
- Baseline measurement locations

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-039
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA15: Greatworth to Lower Boddington	

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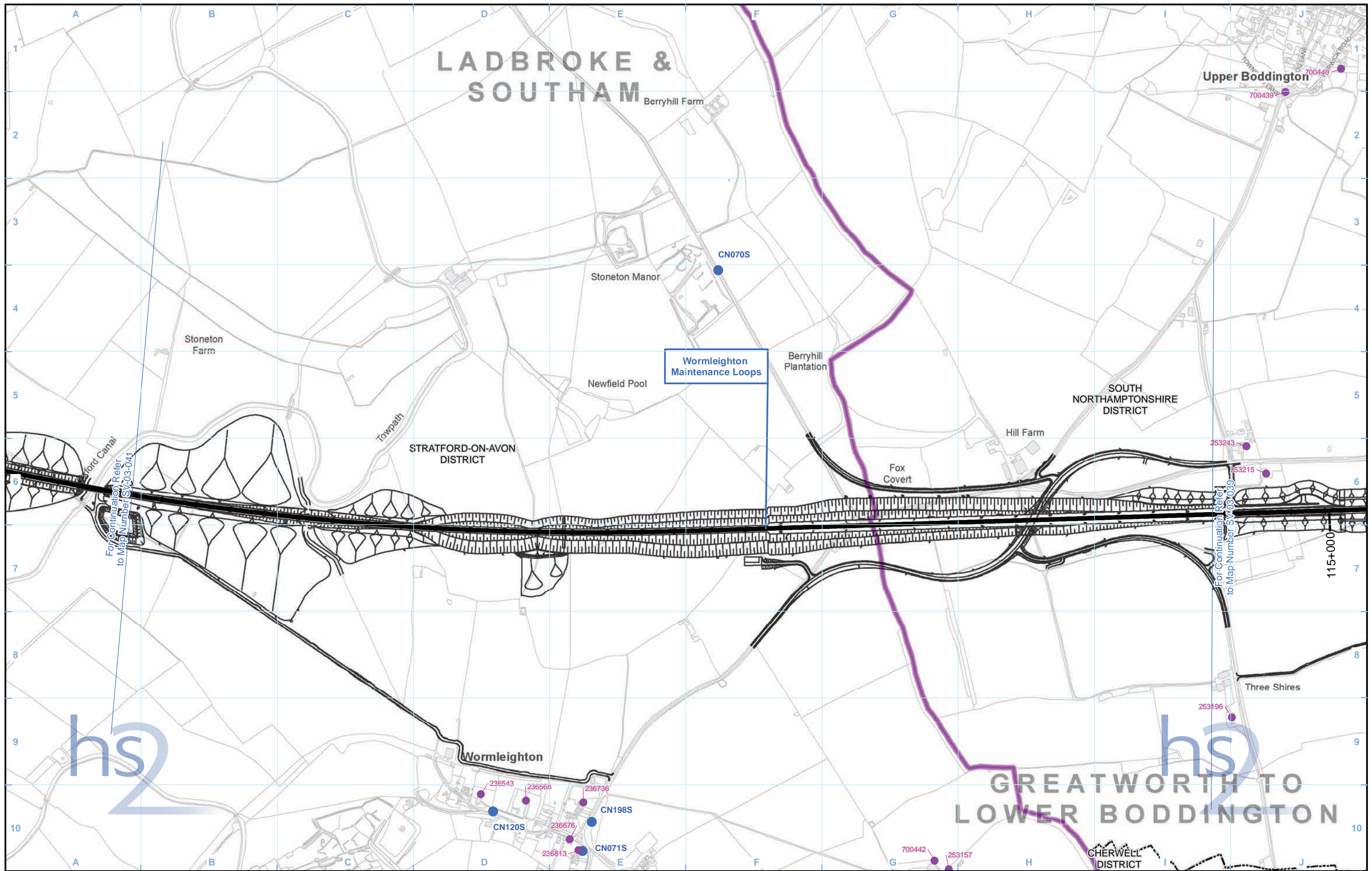
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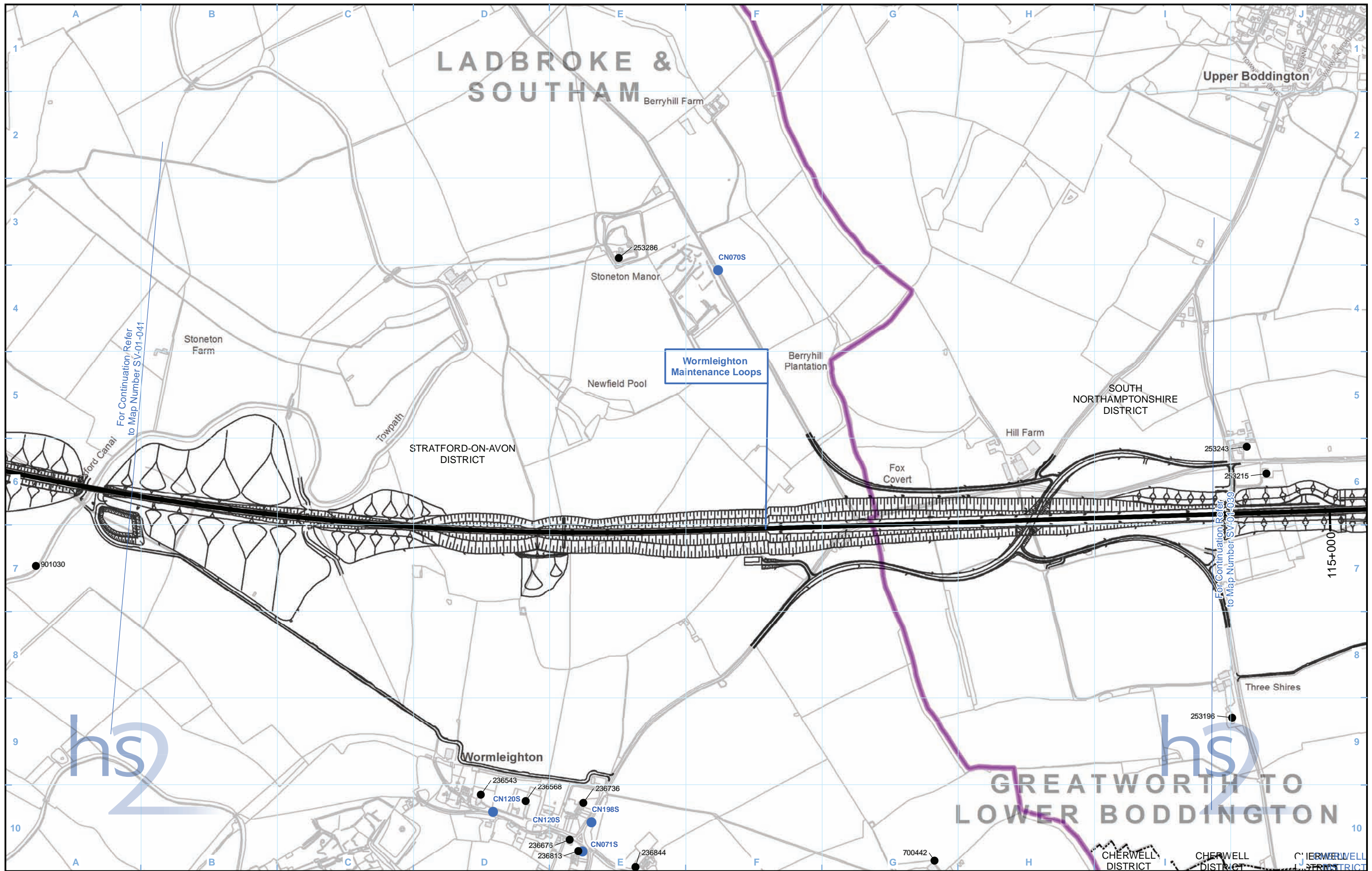
Date: 29/10/13





<b>Legend - General features</b> <ul style="list-style-type: none"><li>Route in bored tunnel</li><li>Route in green tunnel</li><li>Route on surface</li><li>Depot, station, headhouse or portal building</li><li>Community forum boundary</li><li>District/Borough boundary</li><li>County boundary</li></ul>		<b>Legend - Sound related features</b> <ul style="list-style-type: none"><li>Construction airborne sound assessment location</li><li>Construction vibration assessment locations</li><li>Construction airborne sound and vibration assessment location</li><li>Baseline measurement locations</li></ul>		<p>labelled with Assessment Location ID reference number (for details of the assessment results see relevant Vol 5 Appendix SV-003)</p> <p>(labelled with Measurement Location reference code)</p>		<b>Map Number</b> SV-03-040a		<b>Map Name</b> Assessment and Monitoring Locations for Construction Sound, Noise & Vibration Assessments		<b>Scale at A3: 1:10,000</b> 0 100 200 300 400 Metres	
<b>Engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>		<b>Non engineering earthworks:</b> <ul style="list-style-type: none"><li>Embankment</li><li>Cutting</li></ul>				<b>Community Forum Area CFA15:</b> Greatworth to Lower Boddington		<b>Doc Number:</b> C250-ARP-EV-MAP-000-003797		<b>Date:</b> 29/10/13	





<b>Legend - General features</b>		<b>Legend - Sound related features</b>	
Route in bored tunnel	Engineering earthworks: Embankment	Non engineering earthworks: Embankment	Airborne sound assessment location
Route in green tunnel	Engineering earthworks: Cutting	Non engineering earthworks: Cutting	Airborne sound and vibration assessment location
Route on surface			Ground-borne sound and/or vibration assessment location
Depot, station, headhouse or portal building			Airborne sound, ground-borne sound and vibration assessment location
Community forum boundary			Baseline measurement locations
District/Borough boundary			
County boundary			

labelled with Assessment Location ID reference number  
(for details of the assessment results see Vol 5 Appendix SV004)

(labelled with Measurement Location reference code)

Map Number	SV-04-040a
Map Name	Assessment and Monitoring Locations for Operational Sound, Noise & Vibration Assessments
Community Forum Area CFA15: Greatworth to Lower Boddington	

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